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APR 82 J J STEINKIRCHNER F30602-80-C-0263
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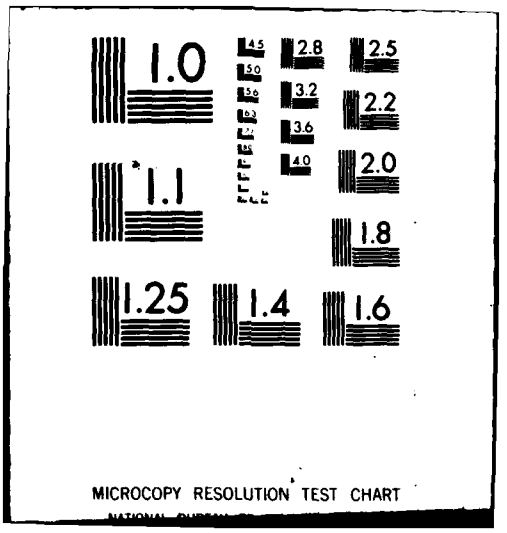
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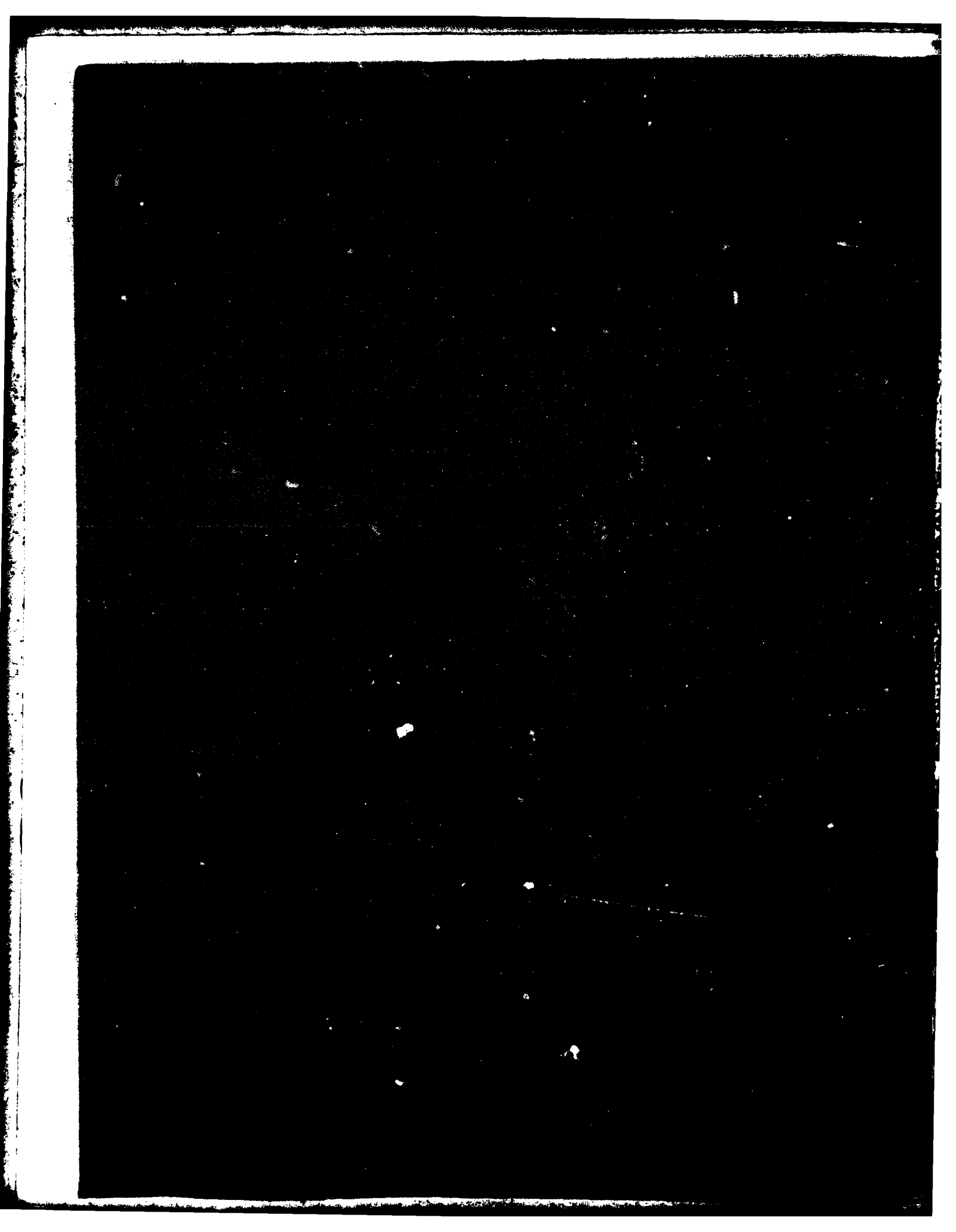

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She[illegible]

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
IIT Research Institute conducted a 12-month study to develop test profiles for rigid wall tactical shelters. A survey was conducted and operational data were obtained on over 1100 tactical equipment/systems. Test cost data and test results were obtained, and an effort to determine the correct text sequence was instituted. The operational data, test costs, test results and the output from the test sequence effort were used to develop test profiles for eight members of the standard family

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SUMMARY

This report describes the results of a 12 month program conducted by IIT Research Institute (IITRI) to develop methodology for deriving mission profiles for all phases of sheltered equipment life. The objective of the program was to assure adequate detailed design requirements and realistic limits for analysis and testing.

The methodology developed to achieve the goals outlined for this program consisted of six tasks:

- o Research and Data Collection
- o Data Summarization and Reduction
- o Data Analysis
- o Operational Mode Summary Development
- o Least Cost Test Profile Development
- o Report Preparation

The data collection effort was comprised of two subtasks - a field survey using personal interviews and mailed questionnaires, and the acquisition of all shelter specifications/standards and other published shelter related literature. The objective of the data collection effort was to obtain operational use data, information on reliability/maintainability (R&M) problems experienced during operational use, information on R&M problems experienced during test, methods of conducting accelerated tests, currently applied test methods and procedures for shelters and test cost information. Operational use data and comments on R&M problems experienced during operational use were received from over 1100 equipments from 67 Air Force organizations. Twenty-four shelter related test reports containing information on R&M problems experienced during test were reviewed. Sixty-five shelter specifications/standards were reviewed. And test cost data were received from seven manufacturers, test laboratories and test courses.

The data/information summarized from the questionnaires and interviews at Air Force units were used to develop Operational Mode Summaries for the sheltered equipment.

The comments summarized from the questionnaires and interviews and the data/information summarized from the published test reports were used to determine R&M problems experienced during operational use.

The specifications/standards applicable to the Standard Family of Shelters were reviewed to ascertain the adequacy of the tests and the correct test sequence.

Several methods of accelerated testing were investigated. The Finite Element Method was selected as the most practical technique of determining the response of a shelter to 15 years of service life.

The test cost information was summarized and analyzed, and estimates of test costs for individual shelter tests developed.

Based on analyses of all the data summarized and reviewed, a five part test program was developed to test a shelter facility (i.e., shelter and equipment housed within it). The test program was developed utilizing qualitative assessments of the data. The qualitative approach was used because the limited amount of R&M data was not sufficient to conduct a quantitative correlation analysis between operational use and R&M problems.

Several new tests were introduced that were considered necessary to adequately test the shelter facility.

The study was handicapped by the virtual lack of historical records pertaining to either deployment utilization, maintenance actions, or test data. This situation is the basis for the recommendations that the Air Force establish a shelter R&M databank which will permit the quantification of R, M, life cycle costs, etc., and that the Shelter Facility tests be instrumented and include the Finite Element (FE) program.

PREFACE

This report was prepared by IIT Research Institute for the Rome Air Development Center, (RADC) Griffiss AFB, New York, under Contract Number F30602-80-C-0263, and is submitted in accordance with Contract Data Requirement List Sequence Number A003. The report is submitted in two volumes. Volume I contains the approach methodology and results of the study. Volume II contains data and information. The RADC technical monitor for this program was Mr. J. Guba (RBES). This report covers the work performed from August 28, 1980 to August 27, 1981.

The principal investigator for this project was Mr. J. Steinkirchner with valuable assistance provided by Mr. B. Arno, Mr. J. Carey, D. W. Fulton, Mr. K. Hofer, Mr. V. Humphreys, Mr. I. Krulac and Mr. R. McGowan.

Approved by,
L. Duvall
L. Duvall
Assistant Research Director
IIT Research Institute

Prepared by,
J.J. Steinkirchner
J.J. Steinkirchner
Project Manager
IIT Research Institute

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this study was to develop methodology for deriving mission profiles for all phases of sheltered equipment life in order to assure adequate detailed design requirements and realistic limits for analysis and testing.

1.2 BACKGROUND

An Air Force tactical shelter will experience many varieties of operational modes over the course of its life cycle. Four typical operational modes are: transportation from the assembly line to the Air Force Organization, routine maintenance, operation on-base and deployment off-base. Figures 1.2-1 through 1.2-4 show some of the possible events associated with these operational modes. A shelter will be subjected to each of these operational modes one or more times during its operational life. Some of the possible activities associated with two of the events, Shipping Sequence and Testing Sequence are shown in Figures 1.2-5 and 1.2-6. These events were described separately because of their multiple occurrences in the operational mode scenarios. The structural integrity of the shelter is dependent upon its ability to resist the dynamic and static loads imposed on it as it undergoes various operational sequences such as transportation, maintenance, and deployment, and as it experiences climatic changes. At present, the test requirements imposed on shelter programs specify standardized testing which may or may not emulate the actual environmental and operational conditions the shelter will experience. For more realistic testing, it is essential that the complete life cycle profile be known and used to derive an Operational Mode Summary which in turn can be used to develop a test profile to approximate actual service life conditions.

1.3 PROJECT METHODOLOGY

The study methodology developed by IIT Research Institute to achieve the specific goals for this project consists of six clearly defined tasks:

(1) Research and Data Collection
(2) Data Summarization and Reduction
(3) Data Analysis
(4) Operational Mode Summary Development
(5) Least Cost Test Profile Development
(6) Technical Report Preparation

Task 1 will be discussed in the next section under Data Collection. The mechanics of the data summarization, reduction, analysis, reliability testing and Operational Mode Summary development will be presented in Section 3.0. The Least Cost Test Profile development is presented in Section 4.0. The conclusions and recommendations are presented in Section 5.0.

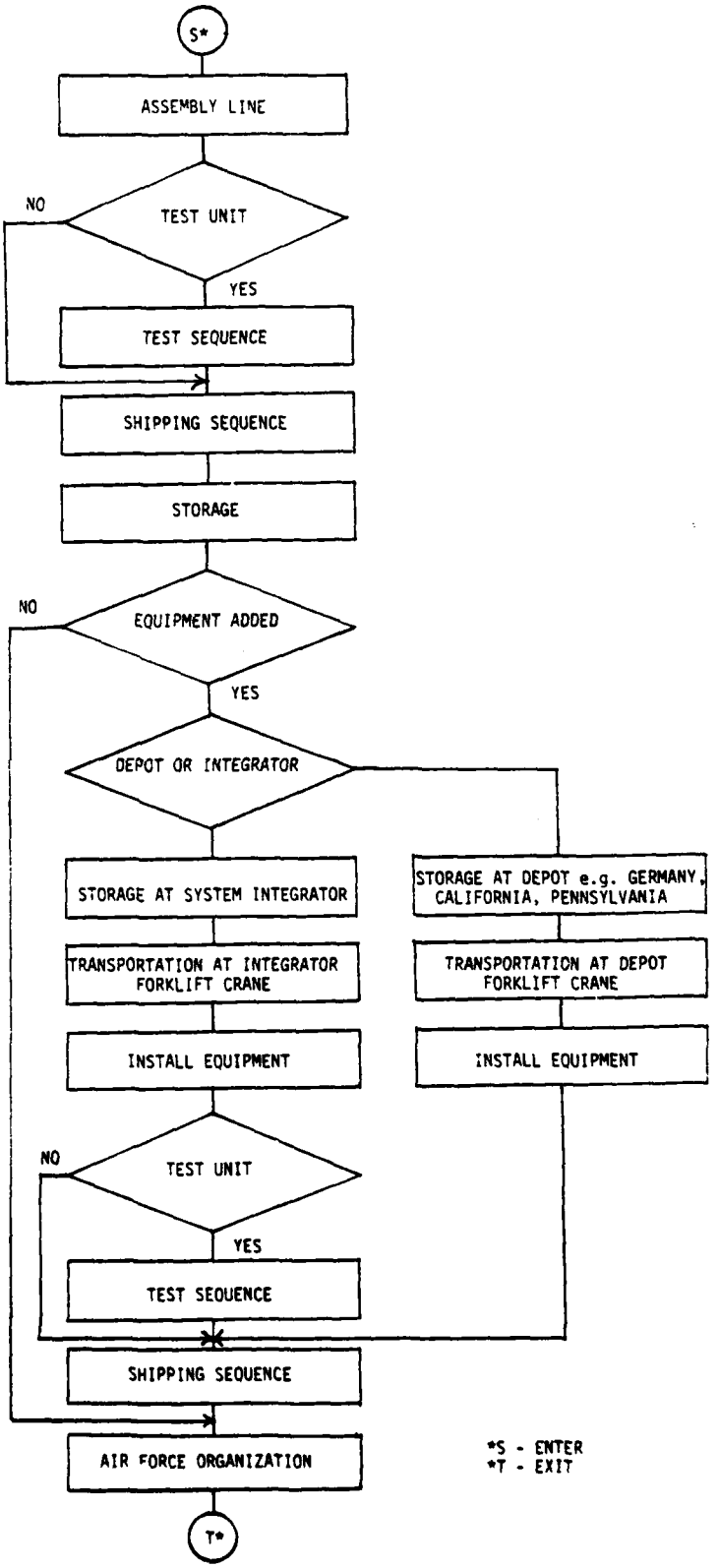

FIGURE 1.2-1 TRANSPORTATION SCENARIO

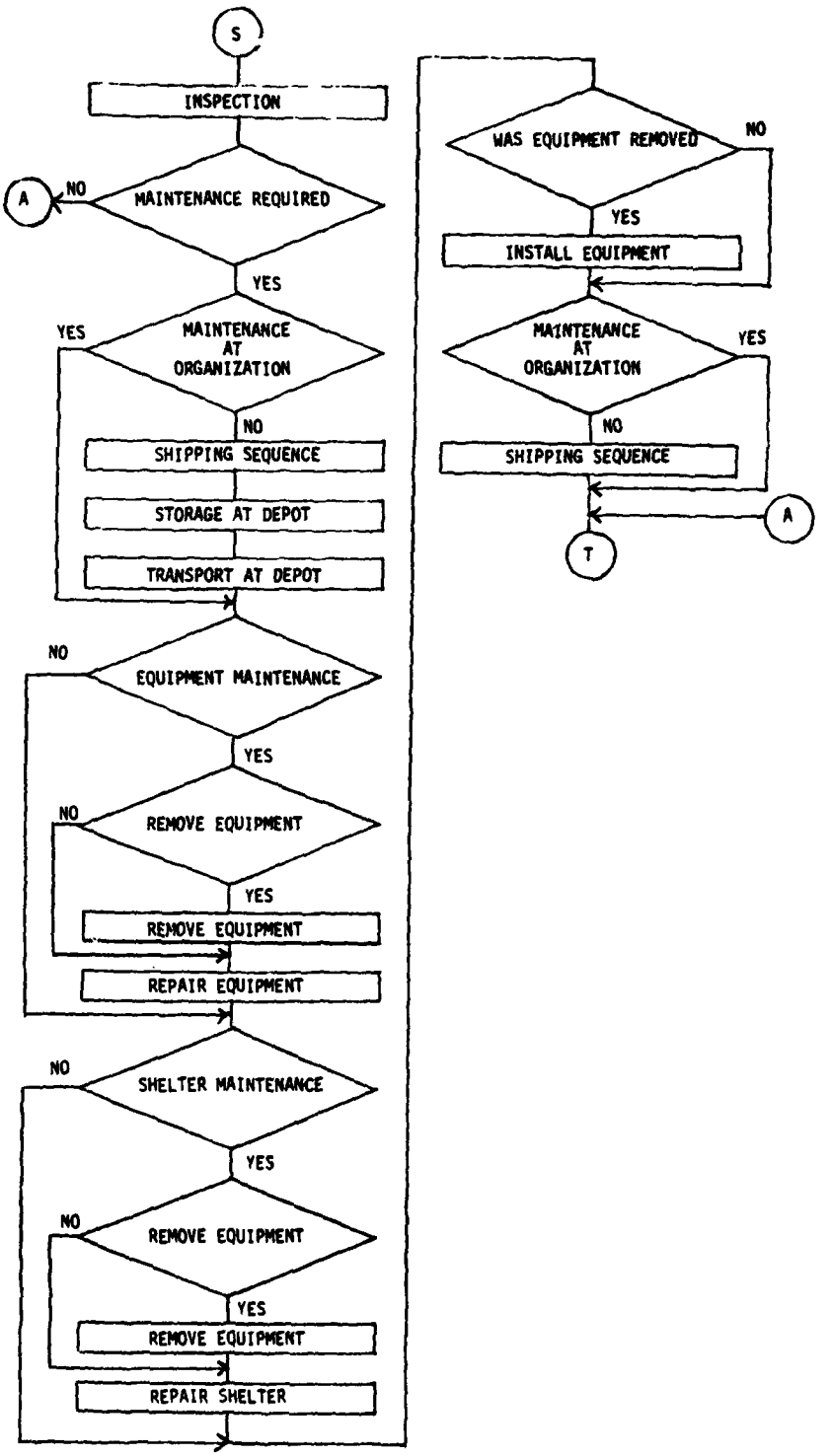

FIGURE 1.2-2 MAINTENANCE SCENARIO

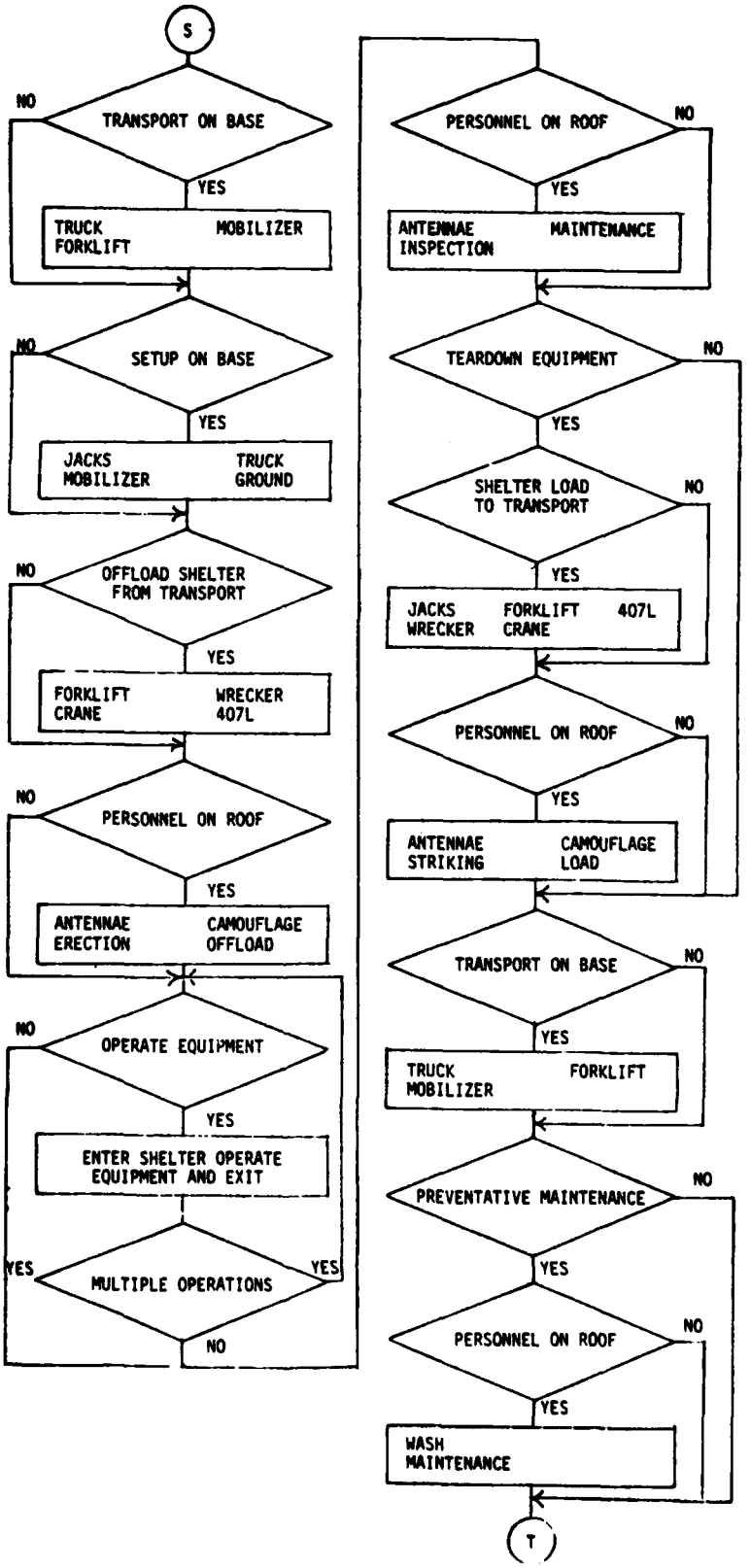

FIGURE 1.2-3 ON-BASE OPERATION SCENARIO

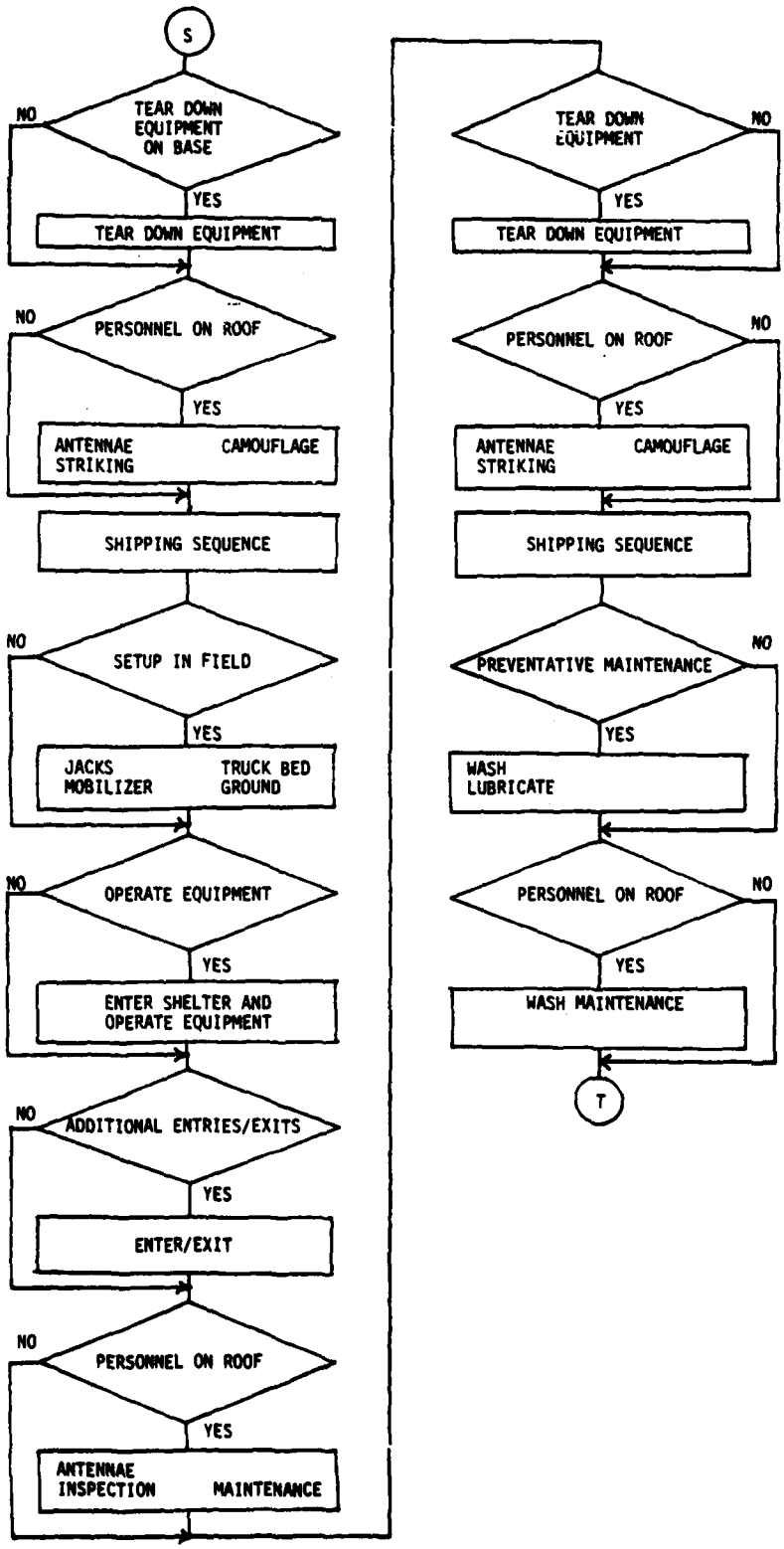

FIGURE 1.2-4 DEPLOYMENT SCENARIO

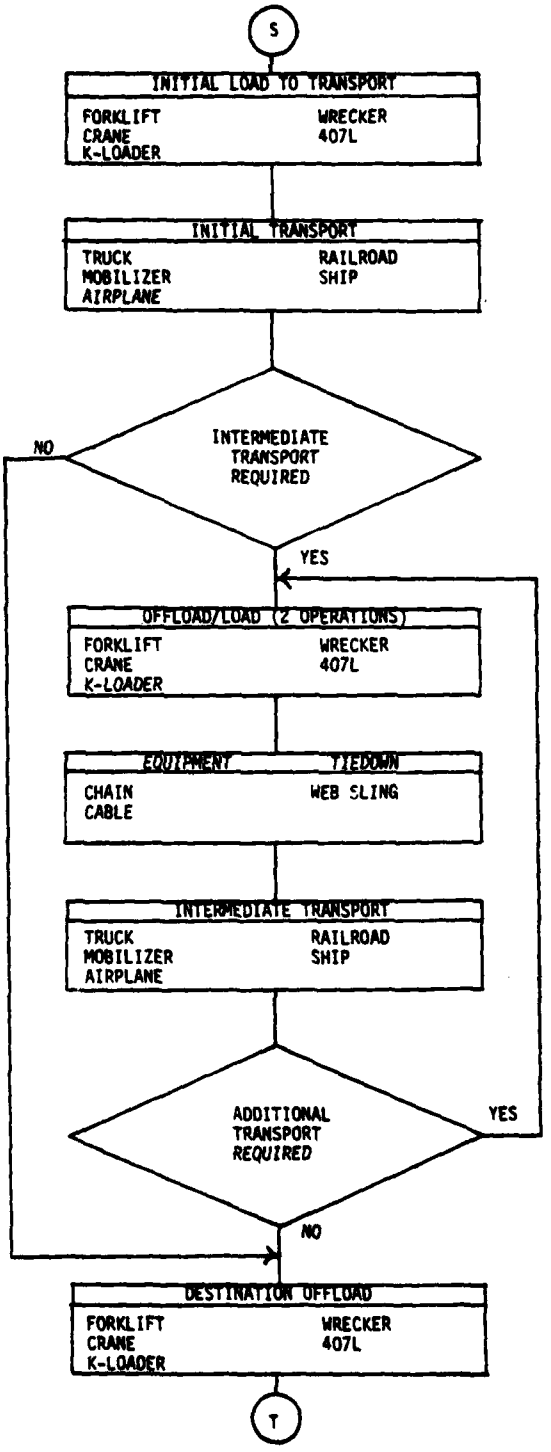

FIGURE 1.2-5 SHIPPING SEQUENCE

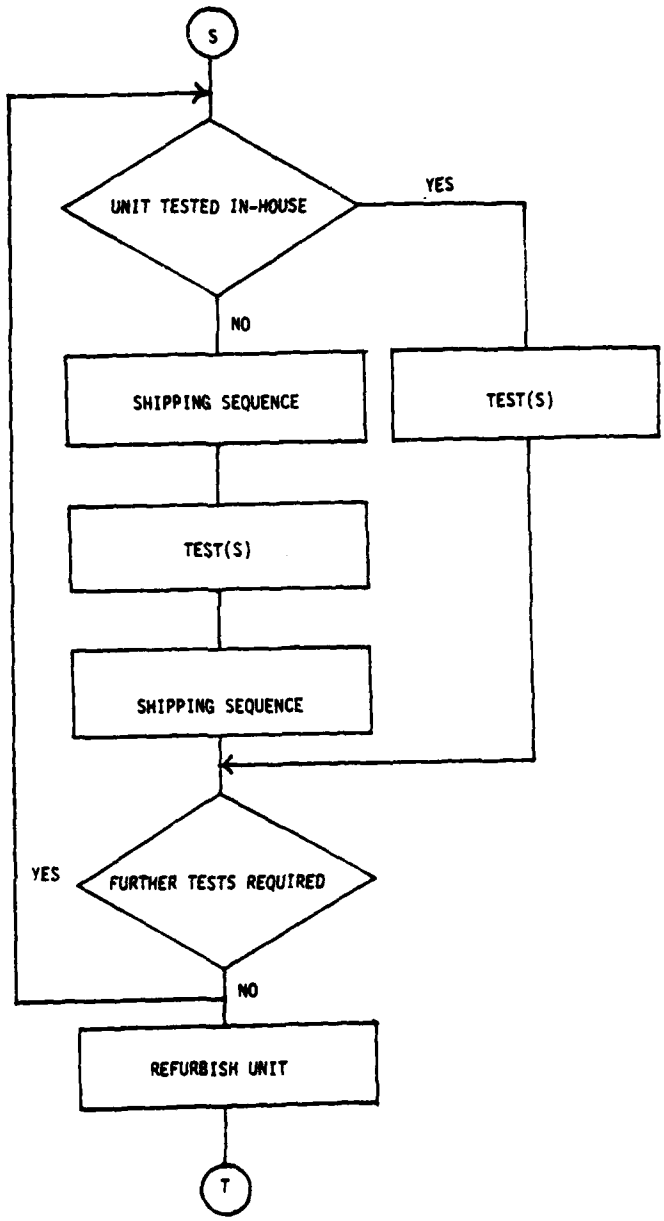

FIGURE 1.2-6 TESTING SEQUENCE

2.0 DATA COLLECTION

A comprehensive data collection effort was initiated. This task was comprised of two subtasks - questionnaire surveys and the acquisition of published data. Each of the subtasks was comprised of several elements as listed below:

- 0 Questionnaire Survey
  - User
  - Terminal Point
  - Manufacturer
- 0 Published Data
  - Test Reports
  - Military Specifications
  - Shelter Construction
  - Stress Loads

A description of each element is presented in this section.

2.1 USER QUESTIONNAIRE SURVEY

A series of surveys were initiated to determine how Air Force ground tactical equipments are used during their entire life cycle. The survey involved the following actions:

- 0 Development of a questionnaire form for use at Air Force units.
- 0 Development of a questionnaire form for use at terminal points and depots.
- 0 Identify candidate Air Force units and terminal points.
- 0 Obtain permission to solicit data/information from the candidate units and terminal points.
- 0 Identify candidate manufacturers.
- 0 Obtain permission to solicit data/information from the manufacturers.
- 0 Visits to selected Air Force Units and terminal points.
- 0 Visits to selected manufacturers.
- 0 Mail questionnaires to selected Air Force Units.
- 0 Telephone followup to determine status of delinquent questionnaires and to resolve questions with data.

The questionnaire form designed for use at Air Force Units went through several revisions before the final form was adopted. The revisions were made following a trial use at an Air Force Unit and after several discussions with the contract monitor. A sample questionnaire form is included in Appendix F. The terminal point questionnaire was not revised. A sample of this questionnaire form is also included in Appendix F. These forms were used to record data for both the mailed surveys and the personal interview surveys. A series of questions were also developed to query respondents during personal interviews. The questions were designed to elicit responses with regard to problems encountered with the shelters.

The list of questions developed are as follows:

- O Is the shelter functionally adequate?
  - Does it serve its purpose?
  - Does it keep out the weather?
- O Have any problems been experienced in the shelter?
  - Has there been any water intrusion?
  - Any problems with delaminations?
    - O Floor inside door
    - O Roof
    - O Walls
  - Any problems with rivnuts loosening?
  - Any problems with seals coming unglued or wearing out early?
    - O RFI
    - O Weather
  - Any problems with door hinges or handles breaking?
  - Any problems with jacks breaking?
  - Any problems with steps breaking?
- O Are there any areas of concern with the shelter?
  - Safety problems?

In addition to the structured questions, several others were developed that were used on occasion or as the occasion demanded. A partial list of these questions follows:

- O Is top pickup used with the wrecker and are spreader bars used?
- O Is the shelter backed up on the mobilizer?
- O Is the shelter ever forded?
- O Is the shelter ever washed? When?
- O Is any equipment stored inside shelter?

Thirty-eight questionnaires were mailed to active Air Force units, and 77 to Air National Guard units. A list of these units is shown in Table 2.1-1.

Twenty-nine active Air Force units, four Air National Guard units and six terminal points were visited. A list of units visited is shown in Table 2.1-2.

Thirty-six questionnaire forms were returned by active Air Force units, 31 by Air National Guard units, and four by terminal points. A list of the units that returned the completed questionnaire or were interviewed is shown in Table 2.1-3.

TABLE 2.1-1: UNITS SOLICITED BY MAIL

UNIT	TYPE*	LOCATION
2ND CMBTCG	AF	PATRICK AFB, FL
5TH CMBTCG	AF	ROBINS AFB, GA
10TH TRW	AF	ALCONBURY AB ENGLAND
26TH TRW	AF	ZWEIBRUKEN AB FRG
601ST TCW	AF	SEMBACH AB FRG
600TH TCG	AF	HESSICH-OLDENDORF AS FRG
601ST TCG	AF	RAMSTEIN AB FRG
DET 1 AFCC	AF	APO NY 09021
DET 2 AFCC	AF	OFFUTT AFB NE
DET 3 AFCC	AF	HICKMAN AFB HI
DET 4 AFCC	AF	LANGLEY AFB VA
DET 5 AFCC	AF	ROBINS AFB GA
DET 6 AFCC	AF	WRIGHT-PATTERSON AFB OH
DET 7 AFCC	AF	RANDOLPH AFB TX
DET 8 AFCC	AF	ANDREWS AFB MD
67TH TRW	AF	BERGSTROM AFB TX
728TH TACCS	AF	EGLIN AFB FL
507TH TACCS	AF	SHAW AFB SC
727TH TCS	AF	EGLIN AFB FL
75TH TCF	AF	EGLIN AFB FL
119TH TCF	ANG	ALCOA TN
HQ PACAF	AF	HICKAM AFB HI
162ND CMBTCG	ANG	NORTH HIGHLAND CA
226ST CMBTCG	ANG	GADSDEN AL
201ST CMBTCG	ANG	HICKAM AFB HI
251ST CMBTCG	ANG	SPRINGFIELD OH
252ND CMBTCG	ANG	TACOMA WA
253RD CMBTCS	ANG	WELLESLEY MA
254TH CMBTCG	ANG	GARLAND TX
281ST CMBTCG	ANG	COVENTRY RI
143RD CMBTCS	ANG	SEATTLE WA
147TH CMBTCS	ANG	VAN NUYS CA
148TH CMBTCS	ANG	COMPTON CA
149TH CMBTCS	ANG	NORTH HIGHLANDS CA
201ST CMBTCS	ANG	HILO CA
123RD TCF	ANG	CINCINNATI OH
256TH CMBTCS	ANG	TACOMA WA
261ST CMBTCS	ANG	VAN NUYS CA
263RD CMBTCS	ANG	BADIN NC
265TH CMBTCS	ANG	SOUTH PORTLAND ME
222ND CMBTCS	ANG	COSTA MESA CA
3RD CMBTCG	AF	TINKER AFB FL
223RD CMBTCS	ANG	HOT SPRINGS AR
224TH CMBTCS	ANG	ST. SIMONS ISLAND GA
226TH CMBTCS	ANG	GADSOEN AL
228TH CMBTCS	ANG	KNOXVILLE TN
231ST CMBTCS	ANG	ANDREWS AFB VA
232ND CMBTCS	ANG	MONTGOMERY AL

TABLE 2.1-1: UNITS SOLICITED BY MAIL (CONT'D)

UNIT	TYPE	LOCATION
234TH CMBTCS	ANG	HAYWARD CA
242TH CMBTCS	ANG	SPOKANE WA
244TH CMBTCS	ANG	PORTLAND OR
152ND TCG	ANG	ROSLYN NY
154TH TCG	ANG	AURORA CO
157TH TCG	ANG	ST. LOUIS MO
101ST TCS	ANG	WORCESTER MA
102ND TCS	ANG	SLATERSVILLE RI
103RD TCS	ANG	ORANGE CT
105TH TCS	ANG	CHENEY WA
107TH TCS	ANG	PHOENIX AZ
115TH TCS	ANG	DOTHAN AL
116TH TCS	ANG	PORTLAND OR
682TH ASOS	AF	SHAW AFB SC
9TH TIS	AF	SHAW AFB SC
602ND TACCS	AF	BERGSTROM AFB TX
712TH ASOS	AF	BERGSTROM AFB TX
12TH TIS	AF	BERGSTROM AFB TX
HQ ESC	AF	KELLY AFB TX
117TH TCS	ANG	SAVANNAH GA
129TH TCS	ANG	KENNESAW GA
104TH TCF	ANG	KLAMATH FALL OR
HQ AFMMO	AF	WASHINGTON DC
106ST TCF	ANG	SALT LAKE CITY UT
108TH TCF	ANG	HANCOCK FLD NY
109TH TCF	ANG	SALT LAKE CITY UT
110TH TCF	ANG	ALCOA TN
112TH TCF	ANG	UNIVERSITY PARK PA
113TH TCF	ANG	HANCOCK FLD NY
225TH CMBTCS	ANG	GULFPORT MS
182ND CEM SQ	ANG	PEORIA IL
262ND CMBTCS	ANG	BELLINGHAM WA
264TH CMBTCS	ANG	CHICAGO IL
267TH CMBTCS	ANG	WELLESLEY MA
271ST CMBTCS	ANG	ANNVILLE PA
282ND CMBTCS	ANG	COVENTRY RI
240TH CMBTCF	ANG	EASTOVER SC
241ST ATCF	ANG	ST. LOUIS MO
244TH CMBTCF	ANG	PORTLAND OR
269TH CMBTCF	ANG	SPRINGFIELD OH
124TH TCF	ANG	CINCINNATI OH
129TH TCF	ANG	KENNESAW GA
134TH TCF	ANG	FT. DODGE IA
154TH TCF	ANG	COLORADO SPRINGS CO
105TH CEM SQ	ANG	WHITE PLAINS NY
111TH CEM SQ	ANG	WHITE GROVE PA
81ST TCF	AF	KADENA AB JAPAN
507TH TACCS	AF	SHAW AFB SC

TABLE 2.1-1: UNITS SOLICITED BY MAIL (CONT'D)

UNIT	TYPE	LOCATION
621ST TCS	AF	OSAN KOREA
6130TH TCF	AF	OSAN KOREA
6140TH TCF	AF	OSAN KOREA
274TH CMBTCS	ANG	ROSLYN NY
283RD CMBTCS	ANG	SAVANNAH GA
240TH ATCF	ANG	EASTOVER SC
242ND ATCF	ANG	SPOKANE WA
254TH CMBTCF	ANG	GARLAND TX
258TH CMBTCF	ANG	ST. CROIX VIRGIN ISLANDS
128TH TCF	ANG	MILWAUKEE WI
133RD TCF	ANG	FT. DODGE IA
138TH TCF	ANG	GREELEY CO
157TH TCF	ANG	ST. LOUIS MO
110TH CEM SQ	ANG	BATTLE CREEK MI
163RD CEM SQ	ANG	ONTARIO GAP CA
6948TH ESC	AF	SAN ANTONIO TX
6922ND ESS	AF	CLARK AB PHILIPPINES
6911TH ESG	AF	HAHN AB FRG
728TH TCS	AF	DUKE FLD FL

*AF - AIR FORCE ANG - AIR NATIONAL GUARD

TABLE 2.1-2: UNITS VISITED

UNIT	TYPE*	LOCATION
10TH TRW	AF	ALCONBURY AB ENGLAND
10TH RTS	AF	ALCONBURY AB ENGLAND
1ST RTS	AF	ALCONBURY AB ENGLAND
621ST TCF	AF	WIESBADEN AB FRG
38TH TRW	AF	ZWEIBRUKEN AB FRG
611TH TCF	AF	ALZEY AS FRG
603RD TCS	AF	ALZEY AS FRG
601ST TCG	AF	RAMSTEIN AB FRG
728TH TCS	AF	EGLIN AFB FL
727TH TCS	AF	EGLIN AFB FL
5TH TAIRCG	AF	OSAN AB LOREA
604TH DASS	AF	CAMP RED CLOUD KOREA
267TH TCS	ANG	WELLESLEY MA
22AF/DOV	AF	**TRAVIS AFB CA
MOTBA	A	**OAKLAND ARMY BASE CA
USA ALC	A	**TOBYHANNA PA
629TH TCF	AF	SCHWELENTRUP FRG
626TH TCF	AF	NORDHOLZ FRG
619TH TCF	AF	SCHWELENTRUP FRG
606TH TCS	AF	BREMERHAVEN FRG
SEA LAND	C	**OAKLAND CA
USA ALC	A	**SACRAMENTO CA
1ST CMBTCS	AF	LINDSEY AS FRG
38TH TRS	AF	ZWEIBRUKEN AB FRG
26TH TRW	AF	ZWEIBRUKEN AB FRG
622ND TCF	AF	RHEIN GRAFFENSTEIN AS FRG
600TH TCG	AF	HESSICH-OLDENDORF AS FRG
601ST TCW	AF	SEMBACH AB FRG
75TH TCF	AF	EGLIN AFB FL
271ST CMBTCS	ANG	INDIAN TOWN GAP PA
621ST TCG	AF	OSAN AB KOREA
1961ST CMBTCG	AF	CLARK AB PHILIPINES
101ST TCS	ANG	WORCESTER MA
USAF ALC	AF	**MC CLELLAN AFB CA
162ND CMBTCS	ANG	ROBINS AFB GA
636TH TCF	AF	NORDHOLZ FRG
609TH TCF	AF	HESSICH-OLKDENDORF FRG

*AF - AIR FORCE
A - ARMY
** TERMINAL POINTS
ANG - AIR NATIONAL GUARD
C - COMMERICAL

TABLE 2.1-3

UNITS RESPONDING

IDENT NO.	UNIT	TYPE	LOCATION
1	5TH TAIRGG	AF	OSAN, KOREA
2	1961 COMM GP	AF	CLARK AB, PHILIPPINES
3	604TH DASS	AF	CAMP RED CLOUD, KOREA
4	239CCF/241ATCF	ANG	BRIDGETON, MO
5	223RD CMBT COMMSQ	ANG	HOT SPRINGS, AR
6	224TH CMBT COMMSQ	ANG	ST SIMONS ISLAND, GA
7	244TH CMBT COMM FLT	ANG	PORTLAND, OR
8	128TH TCF	ANG	MILWAUKEE, WI
9	104TH TCF	ANG	KLAMATH FALLS, OR
10	263RD CMBT COMM SQ	ANG	BADIN, NC
11	129TH TCS	ANG	KENNESAW, GA
12	282ND CMBTCS	ANG	COVENTRY, RI
13	113TH TCF	ANG	SYRACUSE, NY
14	75TH TCF	AF	ELGIN AFB, FL
15	222ND CMBT COMM SQ	ANG	COSTA MESA, CA
16	264TH CMBT COMM SQ	ANG	CHICAGO, IL
17	261ST CMBTCS	ANG	VAN NUYS, CA
18	138TH TCF	ANG	GREELEY, CO
19	71ST TCF	AF	MC DILL AFB, FL
20	103RD TCS	ANG	ORANGE, CT
21	265TH CMBTCS	ANG	PORTLAND, ME
22	226TH CMBTCS	ANG	GADSDEN, AL
23	111 CEM SQ	ANG	WILLOW GROVE, PA
24	267TH CMBTCS	ANG	WELLESLEY, MA
25	12TH TRS	AF	BERGSTROM AFB, TX
26	105TH TCS	ANG	CHENEY, WA
27	91ST TRS/DOTP	AF	BERGSTROM AFB, TX
28	1ST TRS/10TH TRW	AF	ALCONBURY, ENGLAND
29	10TH RTS	AF	ALCONBURY, ENGLAND
30	1ST CMBTCS	AF	LINDSEY AS, GERMANY
31	621ST TCF	AF	WIESBADEN AFB, GERMANY
32	38TH TRS/38TH TRW	AF	ZWEIBRUKEN AFB, GERMANY
33	26TH TRW	AF	ZWEIBRUKEN AFB, GERMANY
34	611TH TCF	AF	ALZEY, GERMANY
35	622ND TCF	AF	RHEIN GRAFENSTEIN, GERMANY
36	603RD TCS	AF	ALZEY, GERMANY
37	124TH TCF	ANG	CINCINNATI, OHIO
38	123RD TCF	ANG	CINCINNATI, OHIO
39	101ST TCS	ANG	WORCHESTER, MA
40	6906 ESS	AF	BROOKS AFB, TX
41	157 TCF	ANG	JEFFERSON BARRACKS, MO
42	256 CMBTCS (AFCH)	ANG	TACOMA, WA
43	112TH TCF	ANG	UNIVERSITY PARK, PA
44	629TH TCF	AF	SCHLELENTRUP, GERMANY

TABLE 2.1-3 (CONT'D)

UNITS RESPONDING

IDENT NO.	UNIT	TYPE	LOCATION
45	626TH TCF	AF	NORDHOLZ, GERMANY
46	619TH TCF	AF	SCHWELENTRUP, GERMANY
47	606TH TCS	AF	BREMERHAVEN, GERMANY
48	636TH TCF	AF	NORDHOLZ, GERMANY
49	727TH TCS	AF	EGLIN AFB, FL
50	81ST TCF	AF	KADENA AB, JAPAN
51	3RD CMBTCG	AF	TINKER AFB, OK
52	507TH TACCS	AF	SHAW AFB, SC
53	682ND ASOC	AF	SHAW AFB, SC
54	6948TH ESC	AF	SAN ANTONIO, TX
55	105TH CEM	ANG	WHITE PLAINS, NY
56	609TH TCS	AF	HESSISCH-OLDENDORF, GERMANY
57	107TH TCS	ANG	PHOENIX, AZ
58	244TH CMBTCS	ANG	PORTLAND, OR
59	6922ND ESS	AF	CLARK AB, PHILLIPINES
60	234TH CMBTCS	ANG	HAYWARD, CA
61	6911TH ESG	AF	HAHN AB, GERMANY
62	621ST TCS	AF	OSAN AB, KOREA
	6130TH TCF	AF	OSAN AB, KOREA
	6140TH TCF	AF	OSAN AB, KOREA
63	728TH TCS	AF	DUKE FIELD, FL
64	2ND CMBTCG	AF	PATRICK AFB, FL
65	271ST CMBTCS	ANG	ANNVILLE, PA

2.2 TEST COST DATA

A survey was conducted to ascertain estimates of costs per test for standard shelter tests, and comments with regard to the adequacy of the tests. The data and information were solicited and obtained from the US Air Force Electronic Systems Division Shelter Management Office, the US Army Test and Evaluation Command, Wyle Laboratories, AVCO Systems Division, Goodyear Aerospace Corporation, Brunswick Corporation, Craig Systems, and Gichner Mobile Systems, Inc.. Test Costs are in CY1981 dollars. The estimates do not include costs incurred by the government in monitoring the tests and/or reviewing the test results.

The actual cost data obtained is presented in Appendix B. Due to the sensitivity of the data, the sources are not identified with specific cost data. Two of the respondents supplied estimates by labor hours and test fixture cost, and six respondents supplied estimates by total test cost. Seven respondents quoted costs against the tests called out in S-280 shelter specification, MIL-S-55286C and one against the tests called out in Army 2:1 ISO shelter specification, DES-X-1-77.

The criteria used to establish the test costs and any comments solicited with regard to the test are presented by respondent in the following paragraphs. The comments are in general direct quotes.

RESPONDENT 1

Data were solicited from this shelter manufacturer for the tests on the Shelter, Tactical, Expandable, One-Side and as called out in document DES-X-1-77, dated April 1977 para. 4.3, First Article Inspection.

Specific comments by test paragraph number (where applicable) that were volunteered are:

TEST PARAGRAPH	TEST NAME	COMMENT
4.4.4.1/4.6.1	PANEL WATERTIGHTNESS	ONE TIME QUALIFICATION RECOMMENDED.
4.6.8	CYCLINDER IMPACT	8 SAMPLES REQUIRED. NOT A GOOD TEST FOR HONEYCOMB CORE PANEL.
4.6.6	MOISTURE RESISTANCE	EXCESSIVE IN COST. ACCELERATED TEST ON COMPONENTS BETTER AT LOWER COST.
4.6.7	THERMAL SHOCK	CONDUCTED ON PANEL. SINGLE CYCLE. SHOULD BE MULTIPLE CYCLES.
4.6.9	MARINE ATMOSPHERE	COMPONENT LEVEL TESTING RECOMMENDED.
4.7.1	TOWING	TEST CONDITION NOT ADEQUATELY SPECIFIED.

TEST PARAGRAPH	TEST NAME	COMMENT
4.7.10	WATER LEAKAGE	SHOULD BE CONDUCTED 100%
4.8.4	STATIC DOOR LOAD	THIS TEST IS BEING REVISED TO INCLUDE HORIZONTAL STATIC AND DYNAMIC LOADS WHICH WILL INCREASE COST. INVOLVES FOUR DOORS.
4.8.6	HEAT TRANSFER	GOOD QUAL. TEST.
4.8.7	SOLAR LOAD	GOOD QUAL. TEST.
4.8.10	STEP	COULD BE ELIMINATED WHEN STD. HARDWARE USED.
-	FORKLIFT HANDLING	A NEW TEST. LIFT AND TRANSPORT AT 8-10 MPH, MAKE 4 RIGHT ANGLE TURNS. REPEAT FOR ALL INSERT POINTS AND BOTH SIDES; THEN ONE ERECTION/TEAR DOWN.

The following is a suggested test sequence:

Panel Tests

Insert Proof Loads
Cylinder Impact
Thermal Shock

Sequence not critical since tests may not be performed on same panel.

Component Tests

Moisture Resistance
Marine Atmosphere

Sequence not critical

Shelter Tests

1. Structural Soundness
2. Watertightness
3. Air Leakage
4. Electrical
5. Blackout
6. Erection and Striking
7. Drop
8. Racking
9. Stacking
10. Lift
11. Longitudinal Restraint
12. Lashing
13. Ground Transport
14. Rail Hump
15. Heat Transfer
16. High Temperature
17. Low Temperature
18. Solar Loads
19. Forklift Handling
20. Towing
21. Step Loads
22. Roof Loads
23. Floor Loads
24. Erection and Striking (repeat)
25. Post Test Inspection

RESPONDENT 2

Data were solicited from this shelter manufacturer for the tests on a S-280 type shelter and as called out in MIL-S-55286C dated 18 July 1977 para. 4.5.2.1, 4.5.2.2 and 4.5.2.3. Cost Estimates are based on a standard size shelter and a standard production run.

Specific comments by test paragraph number (where applicable) that were given are:

TEST PARAGRAPH	TEST NAME	COMMENT
4.6.10	CONSTRUCTION TIGHTNESS	RUN THIS TEST AND ELIMINATE 4.6.31 AND 4.6.32.
4.6.26	AIR TRANSPORT, SIMULATED	DROP THIS TEST AND USE INFO FROM 4.6.25.1.
4.6.27	STATIC DOOR LOAD	DROP THIS TEST.
4.6.30	EMI SUPPRESSION	SHOULD BE PERFORMED ON 100% OF SHELTERS.
4.6.3.1	SHOCK MOUNTS COMPLETE	DROP THIS TEST. IT IS PICKED UP IN 4.6.17.
-		SHELTERS ARE SHIPPED BY TRUCK FROM FACTORY.

RESPONDENT 3

Data are presented from this government operated test course for shelter tests conducted at a test course. The test costs are for a Honeycomb S-280 type shelter. Test costs for a contractor would be almost twice the cost shown in the Appendix. Transportation costs to/from facility must be added.

RESPONDENT 4

Data are presented for shelter tests conducted at a test Lab. The test costs are for either a S-280, S-250 or S-313 type shelter tested to MIL-S-55286C. Transportation costs to/from facility must be added.

RESPONDENT 5

Data are presented for shelter tests conducted at a test Lab. The test costs are for a S-280 type shelter tested to MIL-S-55286C. Transportation costs to/from facility must be added.

RESPONDENT 6

Data are presented for shelter tests conducted at a government operated test course. This is a second estimate for the same test course (see Respondent

3). Estimates include installation and removal of shelter from test facility, normal levels of data acquisition, and other services directly associated with each of the sub-tests. Estimates include no preliminary inspection, preparation, maintenance, or follow-up inspections of test items, or final report. Estimates are based on tests being requested and funded by a US Government agency. Transportation costs to/from facility must be added.

RESPONDENT 7

Data were solicited from the shelter manufacturer for the tests on a S-280 type shelter and as called out in MIL-S-55286C 18 July 1977 para. 4.4. Specific Comments by test paragraph number (where applicable) that were given are:

TEST PARAGRAPH	TEST NAME	COMMENT
-		THEY BELIEVED THAT THE CURRENT LEVEL OF TESTING WAS IN ORDER.
-		THEY BELIEVED THAT THE INITIAL ACCEPTANCE TESTS NEED MORE TEETH, NEED TO BE EXPANDED TO MAINTAIN HIGH QUALITY.
4.6.7	IMPACT PANEL	NOT VALID UNDER PRESENT SPECS. THEY BELIEVED THAT IT WOULD BE BETTER SIMULATED BY USING THE WHOLE SECTION OF ROOF/ SIDE INSTEAD OF A SPECIMAN 24 INCHES SQUARE.
-		SHELTERS ARE SHIPPED FROM FACTORY BY FLATBED TRUCK (97%) AND AIR (3%).
-		THEY BELIEVED THAT SHELTERS SHOULD BE TESTED WITH REAL EQUIPMENT INSIDE INSTEAD OF DUMMY LOADS.
4.6.23	DROPS	THIS TYPE TESTING WOULD BE MORE REALISTIC ALTHOUGH EXPENSIVE. THEY BELIEVE THAT THIS NEEDS REVISION. DETAILS OF SPECIFICATION DOES NOT CORRELATE TO "REAL WORLD". THEY SAID THAT, IF THE SHELTER IS DROPPED, IT IS HIGHLY UNLIKELY TO HIT THE GROUND AS OUTLINED IN THE SPEC. THEY BELIEVED THAT A SHELTER WAS MORE LIKELY TO HIT ON A CORNER.

RESPONDENT 8

Data were solicited from this shelter manufacturer for the tests on a S-280 type shelter and as called out in MIL-S-55286C dated 18 July 1977. Specific comments by test paragraph number (where applicable) that were volunteered are:

TEST PARAGRAPH	TEST NAME	COMMENT
4.6.1, 4.6.2	CORE MATERIAL	THEY WOULD DO AWAY WITH ALL
	COUPON SPECIMENS	ENVIRONMENTAL TESTS BECAUSE THEY ARE USING THE SAME ESSENTIAL PROCESS IN THE SPEC'S ALL THE TIME AND RESULTS HAVE BEEN EXCELLENT (i.e. NO FAILURES/REJECTS). IF PROCESS REMAINS THE SAME, RESULTS SHOULD REMAIN THE SAME.
4.6.17	MOISTURE RESISTANCE	CHANGE TEST FROM 30 DAYS TO 10 DAYS. 10 DAYS IS SUFFICIENT. IF SHELTER DOESN'T LEAK IN 10 DAYS, CHANCES ARE EXCELLENT IT WILL NOT LEAK.
4.6.22	RAIL TRANSPORT	IF SHELTER PASSES THIS TEST, IT CAN PASS ANY TEST.
4.6.33	HOLD DOWN ASSY	THIS IS A DESTRUCTIVE TEST, 4 OUT OF 1ST 50; THEN 1 OUT OF 50. THE SPEC REQUIRES 14,000 LBS. SLINGS DO NOT BREAK UNTIL 16,000 TO 18,000 LBS APPLIED. WHY DESTRUCT GOOD SLINGS?
-		SHELTERS ARE SHIPPED FROM FACTORY BY FLATBED TRUCK UNCRATED (98%), OCCASIONALLY BY AIR, VERY FEW BY RAIL; HOWEVER, THEY BELIEVE THAT MAJORITY OF SHELTERS WILL BE SHIPPED BY RAIL WITHIN THE NEXT 10 YEARS DUE TO TRANSPORTATION COSTS.
-		MOST TEST COSTS ARE ABOUT THE SAME FOR ALL TYPES OF SHELTERS EXCEPT ENVIRONMENTAL TESTS.
-		ENTIRE ENVIRONMENTAL COSTS COULD RUN BETWEEN $25,000 TO $30,000 DEPENDING ON TRANSPORTATION COST, DISTANCE, TIME REQUIREMENTS, LOT SIZE, ETC.

2.3 TEST METHOD

An effort was undertaken to identify and obtain all of the military specifications and standards applicable to ground tactical shelters. The purpose of the data collection effort was the identification of all test methods

currently being imposed on tactical shelters. Table 2.3-1 contains a list of all of the specifications/standard identified and obtained.

2.4 GENERAL SHELTER DATA/INFORMATION

An effort was instituted to obtain general shelter data and information. This effort included telephone and letter solicitations, personal visits and formal requests. A description of these efforts is presented in this section.

A term profile list was constructed and submitted to the Defense Technical Information Center (DTIC). The terms submitted included the following:

Shelter, Tactical
Test Method
Test Cost
Test Report
Reliability

DTIC supplied a list of several hundred documents that met one or more of the terms. The list was reviewed and over 50 documents were selected and ordered.

Both telephone and written solicitations were made to both US Government agencies and four shelter manufacturers. These solicitations were followed up by personal visits to four shelter manufacturers, five government agencies, and one research organization. A list of organizations visited, or solicited by mail or telephone, follows:

VISITED

U.S. Air Force Material Laboratory, Wright-Patterson AFB, OH.
U.S. Air Force Test And Evaluation Center, Wright-Patterson AFB, OH.
U.S. Air Force Electronic Systems Division, Shelter Management Office, Hanscom AFB, MA.
U.S. Air Force S-530 Special Projects Office, Hanscom AFB, MA.
U.S. Army Natick Test Laboratory, Natick MA.
Craig Systems, Lawrence, MA.
Gichner Mobile Systems, Dallastown, PA.
Brunswick Corporation, Marion, VA.
Goodyear Aerospace Corporation, Litchfield Park, AZ.
MITRE, Hanscom AFB, MA.
Tobyhanna Army Depot, Tobyhanna, PA

LETTER/TELEPHONE SOLICITATION

U.S. Army Materiel Systems Analysis Activity, Aberdeen Proving Grounds, MD.
U.S. Air Force Engineering And Services Laboratory, Tyndall AFB, FL.
Defense Technical Information Center, Alexandria, VA.
Air Force Medical Materiel Field Office, Washington, DC.
U.S. Air Force Avionics Systems Division, Wright-Patterson AFB, OH.
U.S. Air Force Communication Command, Scott AFB, IL.
U.S. Air Force Tactical Air Command, Langby AFB, VA.
U.S. Air Force Electronic Security Command, Kelly AFB, TX.
U.S. Air Force Military Airlift Command, Scott AFB, IL.

TABLE 2.3-1: MIL SPECIFICATIONS/STANDARDS

SPEC/STD NUMBER	DATE	NAME
MIL-S-55606C	1/72	(AMENDMENT-1, 10 SEPTEMBER 1976) SHELTER, ELECTRICAL EQUIPMENT S-412 ( ) / TCC-72.
MIL-S-55307	5/71	(AMENDMENT-1, 2 MAY 1972) SHELTER, ELECTRICAL ELECTRICAL EQUIPMENT S-419 ( ) / TCC-72.
MIL-S-55316A	5/77	SHELTER, ELECTRICAL EQUIPMENT S-487 ( ) /TSM-55(V).
MIL-R-55347B	4/78	RADIO TELETYPEWRITER SET AN/GRC-142 ( ) /AN/GRC-122 ( ) (S-502).
MIL-S-49028	9/75	SHELTER, ELECTRICAL EQUIPMENT S-538 ( ) /TSQ-84.
MIL-S-49038	12/74	SHELTER, ELECTRICAL EQUIPMENT S-541 ( ) /TTC-38 (V).
MIL-S-55505D	11/76	(NOTICE 1, 25 APRIL 1978) MIL-S-55505D 15 NOV 1976 IS CANCELED. REPLACING DOCUMENT IS MIL-S-55507D.
MIL-S-55498A	1/70	SHELTER FACILITY, ELECTRICAL EQUIPMENT.
MIL-S-55329	11/70	SEMI-TRAILER, VAN, ELECTRONIC EQUIPMENT V-189 ( ) /MSC-25.
MIL-S-55286D	12/79	SHELTER, ELECTRICAL EQUIPMENT S-280 ( ) 1G.
MIL-S-55562C	3/80	SHOPS, ELECTRONIC, SEMI-TRAILER MOUNTED AN/ASM-189 ( ) AND AN/ASM-190 ( ).
CP 5550100E	4/74	PRIME ITEM DEVELOPMENT SPECIFICATION CI#550100A SHELTER, ELECTRICAL EQUIPMENT (S-530)
MIL-M-8090F	2/74	MOBILITY, TOWED AEROSPACE GROUND EQUIPMENT, GENERAL REQUIREMENTS FOR.
MIL-M-81957A	12/73	MOBILE FACILITY, GENERAL SPECIFICATION FOR
-	4/80	DOD TACTICAL SHELTER PARAMETERS, DRAFT, JOCOTAS TECHNICAL WORKING GROUP.
MIL-STD-810C	4/75	ENVIRONMENTAL TEST METHODS, MILITARY STANDARD
AFR 23-5	4/76	ORGANIZATION AND MISSION - FIELD, AIR FORCE COMMUNICATIONS SERVICE (AFCS) COMBAT UNITS.
FED. TEST STD NO. 191A	7/78	FEDERAL STANDARD FOR TEXTILE TEST METHODS.
AFR 80-18	4/80	DOD ENGINEERING FOR TRANSPORTABILITY, AND AFSC SUPPLEMENT 1.
DES X-1-77	4/77	ITEM DESCRIPTION (DEVELOPMENTAL) FOR SHELTER, TACTICAL, EXPANDABLE, ONE-SIDE.
MIL-STD-210B	12/73	CLIMATIC EXTREMES FOR MILITARY EQUIPMENT, MILITARY STANDARD.
MIL-A-8421F	10/74	AIR TRANSPORTABILITY REQUIREMENTS, GENERAL SPECIFICATION FOR
SPEC NO. 9219-002	12/73	PRIME ITEM PRODUCT FABRICATION SPECIFICATION FOR SHELTER, PACKAGING OF.
SPEC NO. 9219-001	9/73	PRIME ITEM PRODUCT FABRICATION SPECIFICATION FOR SHELTER, RIGID
MIL-S-81030D	3/74	SHELTER, AIR TRANSPORTABLE, AIRCRAFT SUPPORT.

TABLE 2.3-1: MIL SPECIFICATIONS/STANDARDS (CONT'D)

SPEC/STD NUMBER	DATE	NAME
MIL-S-55507C	9/76	SHELTER, ELECTRICAL EQUIPMENT (WITH OR WITHOUT EQUIPMENT), PACKAGING OF.
MIL-S-46854	3/67	(AMENDMENT-18 MARCH 1974) SHELTER, ELECTRICAL EQUIPMENT; GENERAL SPECIFICATION FOR.
MIL-S-83975	4/73	SHELTER, ELECTRONIC MAINTENANCE SUPPORT, AN/GRM-86 MODIFIED.
MIL-S-54122	1/75	SHELTER AND ENTRANCE ASSEMBLY - CHEMICAL - BIOLOGICAL SHELTER SYSTEM: INFLATABLE.
MIL-S-28633A	4/77	SHELTER, EQUIPMENT, MULTIPURPOSE.
MIL-S-43915A	10/77	(AMENDMENT-2, 2 SEPTEMBER 1976) SHELTER, EXPANDABLE FOR MEDICAL UNIT SELF-CONTAINED, TRANSPORTABLE (MUST).
MIL-S-28931B	2/73	(AMENDMENT-3, 30 SEPTEMBER 1974) SHELTER, GENERAL PURPOSE: EXPANDABLE, TRANSPORTABLE.
MIL-S-3725D	10/72	(AMENDMENT- 1, 7 NOVEMBER 1978) SHELTER HALF, TENT.
MIL-S-81220	2/65	SHELTER AND HANDLING SYSTEM, A/E99K-1.
MIL-S-43898B	7/77	SHELTER, MULTI-PURPOSE (MUST).
MIL-S-43893	4/79	SHELTER, INFLATABLE, ONE SECTION ASSEMBLY (MUST).
MIL-S-43869	3/79	SHELTER, INFLATABLE, WITH AIR LOCK AND CONNECTOR, CORRIDOR, INFLATABLE (MUST).
MIL-S-83979	9/73	SHELTER, MOBILE-CRC & CRP OPERATIONS.
MIL-S-51368A	12/75	SHELTER SYSTEM, COLLECTIVE PROTECTION, CHEMI-CAL-BIOLOGICAL: INFLATABLE, 10-MAN, TRAILER TRANSPORTED, M 51.
MIL-S-12771A	12/58	(AMENDENT-2, 12 MARCH 1959) SHELTER, ELECTRICAL EQUIPMENT S-56 ( ) /G.
MIL-S-52059	11/63	(AMENDMENT-1, 20 DECEMBER 1963) SHELTER, ELECTRICAL EQUIPMENT S-141 ( ) /G.
MIL-S-55541D	3/78	(AMENDMENT-1 SHELTER, ELECTRICAL EQUIPMENT S-250 ( ) /G.
MIL-STD-XXXX	3/81	MILITARY STANDARD ENGINEERING AND DESIGN CRITERIA FOR RIGID WALL TACTICAL SHELTERS.
MIL-S-55528A	10/71	SHELTER, ELECTRICAL EQUIPMENT S-298 ( ) /TRC-110(V).
MIL-S-55646	10/68	SHELTER, ELECTRICAL EQUIPMENT S-301/TCC-61.
MIL-S-55586	11/67	SHELTERS, ELECTRICAL EQUIPMENT S-302 ( ) /TCC-62.
MIL-S-55429B	4/70	(AMENDMENT-1, 27 MARCH 1972) SHELTER, ELECTRICAL EQUIPMENT S-318 ( ) /G.
MIL-S-55557A	12/70	(AMENDMENT-1, 11 JANUARY 1971) SHELTER, ELECTRICAL EQUIPMENT S-330 ( ) TRC-117(V).
MIL-S-55588B	1/72	(AMENDMENT-1, 2 MARCH 1976) SHELTER, ELECTRICAL EQUIPMENT S-333 ( ) /TCC-65.
MIL-S-55589A	9/70	SHELTER, ELECTRICAL EQUIPMENT S-335 ( ) /TRC-113.

TABLE 2.3-1: MIL SPECIFICATIONS/STANDARDS (CONT'D)

SPEC/STD NUMBER	DATE	NAME
MIL-S-55696	6/71	SHELTER, ELECTRICAL EQUIPMENT S-336 ( ) /TRC-112.
MIL-S-55306	3/73	SHELTER, ELECTRICAL EQUIPMENT S-338 ( ) /TRC-58.
MIL-S-55578A	9/70	SHELTER, ELECTRICAL EQUIPMENT S-348 ( ) /TSC-58.
MIL-S-55511A	1/70	SHELTER FACILITY, ELECTRICAL EQUIPMENT S-372( ) /MSC-32A.
MIL-S-55581A	10/70	SHELTER ELECTRICAL EQUIPMENT S-368 ( ) /MGC-9A.
MIL-S-55498A	1/70	SHELTER FACILITY, ELECTRICAL EQUIPMENT S-371( ) /MSC-31A.
MIL-S-55584	10/67	SHELTER ELECTRICAL EQUIPMENT S-381 ( )/TCC-69
MIL-S-55590C	1/72	(AMENDMENT-1, 22 FEBRUARY 1973) SHELTER, ELECTRICAL EQUIPMENT S-390 ( ) /TRC-45(V).
MIL-S-55694A	7/73	SHELTER, ELECTRICAL EQUIPMENT S-391 ( ) /TGC-30.
MIL-S-55616	6/68	SHELTER, ELECTRICAL EQUIPMENT S-392 ( ) /TTC-29.
MIL-S-55648B	9/72	SHELTER, ELECTRICAL EQUIPMENT S-393 ( )/TRC-138.
MIL-S-55579	9/67	SHELTER, ELECTRICAL EQUIPMENT S-403 ( )/TSC-76.
MIL-S-55580	9/67	SHELTER, ELECTRICAL EQUIPMENT S-404 ( ) /MSC.
MIL-STD-285	6/56	MILITARY STANDARD ATTENUATION MEASUREMENTS FOR ENCLOSURES, ELECTROMAGNETIC SHIELDING, FOR ELECTRONIC TEST PURPOSES, METHOD OF
AFCC REG 28-1	9/80	AFCC MOBILITY POLICIES AND PROCEDURES (COMBAT COMMUNICATIONS), VOLUME II.

3.0 DATA ANALYSIS

The analysis effort was comprised of the following tasks:

- Published test reports on shelters and facilities were reviewed to determine actual reliability problems experienced during testing. These data were used as an input to determine the adequacy of current test philosophy, and to isolate potential problem areas for which there is no current test.

- The comments obtained from the shelter manufacturers were reviewed and used as an input to determine the adequacy of current test philosophy.

- The comments recorded on the User Questionnaires were reviewed to determine actual reliability problems experienced during operation. These data were used as an input to determine the adequacy of current test philosophy, and to isolate potential problem areas for which there is no current test.

- The current specifications/standards imposed on shelters were reviewed to determine the tests and inspections that have historically been imposed on procurements.

- A hypothetical operational life profile for shelters in general was formulated. Based on this hypothetical life, a test sequence was generated for the tests called out for the S-250, S-280, S-530 and ISO shelters.

- Several methods of conducting accelerated reliability testing were reviewed and a method was recommended.

- The results of the User Questionnaires were analyzed and Operational Mode Summaries were generated.

- The Operational Mode Summaries were compared with the recorded data in MIL-STD-210B.

- The test cost data were summarized and analyzed, and estimates of individual test costs were obtained.

- The data/information assimulated during the reviews and analyses were evaluated in light of information obtained from the RADC Contract Monitor with regard to current shelter procurement philosophy in order to develop a test program for shelters.

A description of these efforts and the results are presented in this section and the accompanying appendices.

3.1 OPERATIONAL MODE SUMMARIES

The user survey data was used to develop operational modes for each equipment type. An operational mode being defined as a unique event either tactical or logistical. The complete mix of operational modes was used to develop the operational mode summary for the equipment.

There are a number of operational and environmental parameters present in the shelter environment. These include:

Altitude
Dust/Sand
Temperature
Temperature Cycling
Solar Radiation
Shock (Mechanical)
Fungus/Microbes
Salt Fog
Humidity
Acceleration
Vibration
Acoustical Noise
Electromagnetic
Rain/Snow/Ice
Corrosive Environment

The stresses associated with these parameters are a function of the geographic location of the shelter and the specific operational events experienced by the shelter. The reliability impact of the stresses on a shelter is a function of the stress, the stress level, shelter construction, and the size, weight, location and mounting technique of the equipment housed in the shelter. Since the stress and stress level vary continuously during an operational event, and since the shelter response varies from shelter to shelter, it was believed that it would not be possible to develop an operational mode summary based on individual stresses.

Since an operational mode summary based on individual stresses was not considered feasible, other attributes were sought which could be used to describe the stresses imposed on a shelter. The attributes considered are comprised of the following tactical/logistic events, deployment locations and other parameters:

Number of times sent to depot for repair
Number of times setup
Number of times setup on uneven terrain
Number of times setup on jacks
Number of days operated
Number of hours operated
Number of times door exercised
Number of times deployed
Number of days deployed
Number of miles deployed over paved roads
Number of miles deployed over unpaved roads

Number of times helilifted
Number of times deployed by rail
Number of times deployed by ship
Number of times accidently dropped
Geographical locations
Mobilizing methods
Tie down methods
Load/unload methods
Number of personnel on roof

The user survey discussed in Section 2 was developed to ascertain estimates of these attributes. The rationale for choosing each attribute is discussed in the following paragraphs.

Number of times sent to depot for repair (NDR). This event gives an estimate of the major maintenance actions required and is a logistics deployment.

Number of times setup at home station. This event gives an estimate of the number of erections/teardowns, antennae installations, etc..

Number of times setup on uneven terrain. Whenever a shelter is setup on uneven terrain, and jacks are used to level the shelter, a force is exerted on the jack attachment points perpendicular to the line of motion due to the arc transcribed by the motion of the shelter. This event along with the number of times the equipment is setup on jacks gives an estimate of the number of times this force is exerted on the attachment points.

Number of times setup on jacks. In addition to the rationale discussed above, this event gives an estimate of the number of times a force is exerted on the jack attachment points, and the number of times the jack mechanism is exercised.

Number of Days Operated at Home Station. This event gives an estimate of the operational use experienced by the shelter.

Number of hours/day operated at home station. This event coupled with the number of days operated at home station gives an estimate of the operational use experienced by the shelter.

Number of times door opened/closed per day at home station. This event along with the expected daily operational use gives an estimate of the dynamic floor loads experienced by the shelter in the high traffic door area. It also gives an estimate of the number of times the door hinges and latching mechanism are exercised.

Number of times deployed. This event gives an estimate of the number of times the shelter is mobilized and experiences foreign climates.

Number of days deployed. This event along with number of times deployed gives an estimate of field usage.

Number of miles deployed over paved roads. This event along with the mobilizing method gives an estimate of the cumulative stress experienced by the shelter.

Number of miles deployed over unpaved roads. This event along with the mobilizing method gives an estimate of the cumulative stress experienced by the shelter.

Number of times helilifted. This event gives an estimate of the number of times the lifting rings and attachment points are stressed. It also gives an estimate of the number of possible times that the shelter could experience a free fall onto a hard surface.

Number of times deployed by air. This event gives an estimate of the number of times the tie down rings and attachment points are exercised. It also gives the number of times that the shelter may experience landing shocks and both horizonal and vertical gravitational forces. In addition, it gives the number of possible times that the shelter may experience rapid decompression forces.

Number of times deployed by train. This event gives an estimate of the number of times the lifting and towing rings and attachment points are exercised. It also gives an estimate of the number of times the shelter will experience shocks due to railroad car couplings.

Number of times deployed by ship. This event gives an estimate of the number of times the lifting and attachment points will be exercised. It also gives an estimate of the number of times an ISO shelter will be stacked. It also gives an estimate of exposure to salt fog.

Where deployed and season. These parameters along with the unit home location can be used to derive an estimate of the various climatic conditions that the shelter must withstand.

Mobilizing methods. This parameter coupled with the number of miles deployed gives an estimate of the cumulative stress experienced by the shelter during transportation.

Tie down method. The stress applied to the tie down rings and attachment points can be a function of the method of tie down and the apparatus used to apply tension. The chain method of tie down may cause damage to the shelter if slack occurs in the chain. This parameter gives an estimate of the percent of shelters tied down by the various methods.

Load/unload method. The stress applied to a shelter during load and unloading to the mobilizer is a function of the method used. For instance, the 407L loading system applies a force to the towing rings while a crane or wrecker using a top lift applies a force to the lifting rings, and a wrecker applies a different force than a crane because of the sling angle.

Number of personnel on roof. This parameter measures the static and dynamic roof loads imposed by personnel.

Reason(s) for personnel on roof. This parameter gives the reasons why personnel are on the roof. It was assumed that personnel would be on the roof of all shelter types for camouflaging and inspection/maintenance, but that they were only required on certain equipments for erection/teardown, antenna installation, and vehicle loading/unloading.

Some measured stress data were obtained during the data collection effort. These data were analyzed to determine if the original assumptions regarding the feasibility of using individual stresses to develop operational mode summaries were correct. One group of data obtained was from a rail transport test (Ref 29). The measured data from one accelerometer during this test varied from 1 to 100g's during one impact, and to 1 to 170g's during the next impact. Peak accelerations measured by different accelerometers at different locations but on the same end of the shelter measured 95 and 63g's respectively. Other stress data measured during ground transportability testing (Ref 30) showed 6 and 7 to 1 differences in the peak g-levels measured at different gages during the same test and from 1 to 7 differences depending on the type mobilizer used during the test. These examples show that actual stress data is highly dependent on the mounting location of the gage, that the measured stress may vary as much as 1.7 to 1 on the same accelerometer during a similar type test, and that other factors such as mobilizer type and equipment location have a significant impact on the actual stresses measured. The data tend to confirm that with the limited amount of data available, the use of actual stress data to generate operational mode summaries was not feasible.

3.1.1 DATA SUMMARIZATION

The data collected in the user surveys were summarized by equipment type. Seventy-one questionnaire forms were returned, 36 by active Air Force units, 31 by Air National Guard units, and four by terminal points. A list of the respondents is presented in Table 3.1-1. The summarized unit survey data is presented in Appendix C. The terminal survey forms are presented in Appendix E.

Not all of the questions were answered on the questionnaires. These non-reponses are discounted from the summarizations. Some responses were given as a range of values. When this occurred, the average value was calculated and used in the summarization. In several instances the possibility of an event occurring was indicated, but no frequency was given. In these cases the letter 'Z' was inserted in the summary but the data were not included in the summarizations. In many cases the response was given as an inequality (eg $\leq$, $\geq$). In these cases the inequality was set to an equality. (eg. =).

3.1.2 DATA ANALYSIS

Two basic parameters were deemed necessary to be able to use the survey data to develop operational mode summaries - an estimate of central tendency and an estimate of some upper percentile of the entire equipment population for each of the attributes included in the operational mode summary. The rationale used to determine the proper methods and parameters is discussed in this section along with the results of the analyses.

TABLE 3.1-1: UNIT IDENTIFICATIONS

IDENT NO.	UNIT	TYPE	LOCATION
1	5TH TAIRGG	AF	OSAN, KOREA
2	1961 COMM GP	AF	CLARK AB, PHILIPPINES
3	604TH DASS	AF	CAMP RED CLOUD, KOREA
4	239CCF/241ATCF	ANG	BRIDGETON, MO
5	223RD CMBT COMMSQ	ANG	HOT SPRINGS, AR
6	224TH CMBT COMMSQ	ANG	ST SIMONS ISLAND, GA
7	244TH CMBT COMM FLT	ANG	PORTLAND, OR
8	128TH TCF	ANG	MILWAUKEE, WI
9	104TH TCF	ANG	KLAMATH FALLS, OR
10	263RD CMBT COMM SQ	ANG	BADIN, NC
11	129TH TCS	ANG	KENNESAW, GA
12	282ND CMBTCS	ANG	COVENTRY, RI
13	113TH TCF	ANG	SYRACUSE, NY
14	75TH TCF	AF	ELGIN AFB, FL
15	222ND CMBT COMM SQ	ANG	COSTA MESA, CA
16	264TH CMBT COMM SQ	ANG	CHICAGO, IL
17	261ST CMBTCS	ANG	VAN NUYS, CA
18	138TH TCF	ANG	GREELEY, CO
19	71ST TCF	AF	MC DILL AFB, FL
20	103RD TCS	ANG	ORANGE, CT
21	265TH CMBTCS	ANG	PORTLAND, ME
22	226TH CMBTCS	ANG	GADSDEN, AL
23	111 CEM SQ	ANG	WILLOW GROVE, PA
24	267TH CMBTCS	ANG	WELLESLEY, MA
25	12TH TRS	AF	BERGSTROM AFB, TX
26	105TH TCS	ANG	CHENEY, WA
27	91ST TRS/DOTP	AF	BERGSTROM AFB, TX
28	1ST TRS/10TH TRW	AF	ALCONBURY, ENGLAND
29	10TH RTS	AF	ALCONBURY, ENGLAND
30	1ST CMBTCS	AF	LINDSEY AS, GERMANY
31	621ST TCF	AF	WIESBADEN AFB, GERMANY
32	38TH TRS/38TH TRW	AF	ZWEIBRUKEN AFB, GERMANY
33	26TH TRW	AF	ZWEIBRUKEN AFB, GERMANY
34	611TH TCF	AF	ALZEY, GERMANY
35	622ND TCF	AF	RHEIN GRAFENSTEIN, GERMANY
36	603RD TCS	AF	ALZEY, GERMANY
37	14TH TCF	ANG	CINCINNATI, OHIO
38	123RD TCF	ANG	CINCINNATI, OHIO
39	101ST TCS	ANG	WORCHESTER, MA
40	6906 ESS	AF	BROOKS AFB, TX
41	157 TCF	ANG	JEFFERSON BARRACKS, MO
42	256 CMBTCS (AFCH)	ANG	TACOMA, WA
43	112TH TCF	ANG	UNIVERSITY PARK, PA
44	629TH TCF	AF	SCHWELENTRUP, GERMANY

TABLE 3.1-1: UNIT IDENTIFICATIONS (CONT'D)

IDENT NO.	UNIT	TYPE	LOCATION
45	626TH TCF	AF	NORDHOLZ, GERMANY
46	619TH TCF	AF	SCHWELENTRUP, GERMANY
47	606TH TCS	AF	BREMERHAVEN, GERMANY
48	636TH TCF	AF	NORDHOLZ, GERMANY
49	727TH TCS	AF	EGLIN AFB, FL
50	81ST TCF	AF	KADENA AB, JAPAN
51	3RD CMBTCG	AF	TINKER AFB, OK
52	507TH TACCS	AF	SHAW AFB, SC
53	682ND ASOC	AF	SHAW AFB, SC
54	6948TH ESC	AF	SAN ANTONIO, TX
55	105TH CEM	ANG	WHITE PLAINS, NY
56	609TH TCS	AF	HESSISCH-OLDENDORF, GERMANY
57	107TH TCS	ANG	PHOENIX, AZ
58	244TH CMBTCS	ANG	PORTLAND, OR
59	6922ND ESS	AF	CLARK AB, PHILLIPINES
60	234TH CMBTCS	ANG	HAYWARD, CA
61	6911TH ESG	AF	HAHN AB, GERMANY
62	621ST TCS	AF	OSAN AB, KOREA
	6130TH TCF	AF	OSAN AB, KOREA
	6140TH TCF	AF	OSAN AB, KOREA
63	728TH TCS	AF	DUKE FIELD, FL
64	2ND CMBTCG	AF	PATRICK AFB, FL
65	271ST CMBTCS	ANG	ANNVILLE, PA

The arithmetic mean for survey data may not be an efficient estimate of central tendency particularly, as in this study, where the data are so limited that the tails of the distribution cannot be defined. The mode can be erratic and is usually the most extreme indicator of the central tendency of the distribution. The median generally lies between the mean and the mode, if it is not coincident. Futhermore if it is suspected that the data will eventually tend to normality then the mean, median and mode are the same. For these reasons the median frequency of occurrence was chosen as the measure of central tendency that would be used.

Since it is not appropriate to develop a test profile against a parameter such as the median where approximately 50% of the population would experience service loads worse than the test loads, some upper limit had to be set such that a large percentage of the population would experience service loads at levels at or below the test loads. The 90% upper confidence limit on the population was chosen for the upper bound on the attributes included in the operational mode summaries. There are two basic methods of calculating bounds or limits on a parameter. These are via classical distribution tests or non-parametric methods. The method selected and the rationale for selecting it are discussed below.

Classical distribution tests usually require sample sizes greater than thirty. Since there was not enough data in a majority of the operational mode data sets to use the classical statistical methods, non-parametric methods were applied to all data sets for uniformity of results. Non-parametric tests are derived from probabilities of observing particular runs, sequences or conditions under some null hypothesis. The probabilities used are exact values and as such will not necessarily fit into the usual neat categories (e.g. 95%, 90%, etc). The upper limit on the population was chosen at the point where 90% of the population falls at or below the upper limit with a given confidence. For sample sizes greater than or equal to 50 this confidence is 90%, i.e., we are 90% confident that 90% of the population lies at or below this limit. Since the upper limit and confidence are a function of sample size, it was not possible to hold both the upper limit and the confidence at 90% when the sample size was less than 50. For sample sizes less than 50 the upper limit was held at 90% and the confidence was allowed to vary. Reference 1, Tables A-31 and A-32 were used to calculate these limits.

The Operational Mode Summary sheets are presented in Appendix A. For those upper limits for which the confidence on the limit is less than 90%, the confidence limit is given in parenthesis.

3.1.2.1 COMPARISION OF RESPONSES FOR TWO GROUPS OF DATA.

Since responses were obtained from two sources (Air National Guard and Active Air Force), a test was used to decide whether it may be reasonably assumed that the data are from the same distribution. The Wilcoxon-Mann-Whitney (W-M-W) test for independent samples was used to test if the data could be assumed to come from the same distribution. The only assumption made was that the data from the two groups have similar dispersion. The W-M-W test for independent samples covers both these conditions and is based on rank sums. Basically, if the null hypothesis is rejected, then a difference in responses is concluded. The tables used to perform this test are contained in Reference 1.

The Kolmogorov-Smirnov (K-S) test was used as a backup where the W-M-W test was inconclusive to test the hypothesis that two sets of data are from the same distribution, against the alternative that they are not. The K-S test compares the deviations (D) between points on two cumulative probability distributions (F_1 and F_2) where, in this case, F_1 is the probability distribution of the responses given to a question at Air National Guard units and F_2 is the probability distribution of the responses given to the same question at Active Air Force units. If the maximum deviation (D_{max}) at any point between F_1 and F_2 is greater than the theoretical value for D at the 90th percentile, the hypothesis that the two sets of data are from the same distribution is rejected. The theoretical distribution of D can be found in Reference 2.

The W-M-W test for two independent samples and the K-S test where required were used on the results for each question summarized in Tables 3.1-2 and 3.1-3. The results presented in Table 3.1-4 show that the Active Air Force units utilize the equipment more frequently at the home station, that they deploy more often, that the duration of their deployments are longer and that they deploy for longer distances by road. The other parameters for the two types of organization (i.e. number of hours operated per day, etc) can be assumed to be the same. Table 3.1-5 describes the questions against which the comparsions were made.

Although it was proven that there are differences between the service use in an active Air Force unit and an Air National Guard (ANG) unit, the way the government procures systems does not lend itself to the development of separate test profiles for the two types of services. When the government procures a shelter it may be used to house communications equipment or radar equipment and it may then be sent to an active unit or an ANG; therefore, the end service use is not known when the shelter or facility tests are conducted. For this reason all of the responses were merged into a single operational mode profile. In addition, the use of all the data gives a better overall average of the expected use, and allows for the generation of a more realistic test profile.

The comparsion tests were performed prior to the change in the government's shelter procurement philosophy. The information is presented so that a government analyst can use the data contained in Appendix C to develop operational mode summaries should the procurement philosophy change or in case of a shelter procurement that is made specifically for an Active or Air National Guard unit.

3.1.3 FUTURE TRENDS

This section lists comments and observations on operational uses and conditions that were noted during the surveys for which no quantitative data were developed for the operational mode summaries. Shelters procured in the future will be subjected to these uses and conditions; therefore, they were one of the inputs considered during the development of the test profiles.

Although the numbers of responses did not indicate that rail deployments were very frequent, it was the opinion of the representative of one shelter manufacturer that rail shipments from the factory would increase due to economics. It was also observed during the survey in Korea that equipments were being off-loaded from ships onto railroad flat cars for operation Team Spirit

TABLE 3.1-2

QUESTIONNAIRE SUMMARY FORM

EQUIPMENT TYPE AN/TRC-97 SHELTER TYPE(S) S-308

QUESTION NUMBER	RESPONSE					CONFIDENCE LIMIT	
	TOTAL	AVERAGE	MINIMUM	MAXIMUM	MEDIAN	UPPER LIMIT	CONF LEVEL (%)
1	30	-	-	-		-	-
2	91	3.0	1	16	2	-	-
3 ACTIVE AF	8	-	-	-	-	-	-
3 ANG	22	-	-	-	-	-	-
4 INTERVIEW	9	-	-	-	-	-	-
4 QUESTIONNAIRE	21	-	-	-	-	-	-
5	55	1.8	1	8	1	-	-
6	472.18	8.7	.25	31	6.5	2.2 7.6	98.5(A) 96.1(T)
7	471.6	5.9	1	14	4.9	8.0	95.6
8	3.24	.04	.14	1	0	-	-
9	0	0	0	0	0	-	-
10	22	.26	0	3	0	2	94.5
11	0	0	0	0	0	-	-
12	27.25	.30	0	10	0	10	96.9
13	15	.16	0	3	0	-	-
14	166	1.9	0	6	1	6	99.6
14A	58.25	.64	0	2	.5	-	-
14B	46.25	.51	0	2	.38	-	-
15	14320	166.5	1	365	120	270 100	98.3(A) 96.1 (T)
15A	761	8.8	2	24	8	8	93.2
16	212.5	3.0	0	12	2.5	4	95.6
17	533.5	5.9	1	12	4.5	9 3	98.3(A) 93.3(T)
17A TRUCK	30/91	-	-	-	-	-	-
17A MOBILIZER	0/0	-	-	-	-	-	-
17B CHAIN	9/38	-	-	-	-	-	-
17B CABLE	12/33	-	-	-	-	-	-
17B WEB SLING	11/19	-	-	-	-	-	-
17C CRANE	2/3	-	-	-	-	-	-
17C 407L	1/1	-	-	-	-	-	-
17C FORKLIFT	17/55	-	-	-	-	-	-
17C WRECKER	15/56	-	-	-	-	-	-
17D	33.4	.54	0	3	0	1	96.2
17E	1374	15.3	2	30	17	20 15	98.5(A) 96.1(T)
17F	17969	201.9	10	1850	100	100 505	98.5(A) 94.2(T)
17G	958.5	10.9	0	50	5	15	95.6
17H	26/37	.29/.41	0/1	2/2	1/1	1	95.6
17I	1218.7	14.2	2	120	4.7	16	93.2
18 YES	14/26	-	-	-	-	-	-
18 NO	7/13	-	-	-	-	-	-
19 YES	8/19	-	-	-	-	-	-
19 NO	12/18	-	-	-	-	-	-
20 YES	5/11	-	-	-	-	-	-
20 NO	15/26	-	-	-	-	-	-

TABLE 3.1-3

QUESTIONNAIRE SUMMARY FORM

EQUIPMENT TYPE AN/TSC-60 SHELTER TYPE(S) S-448,449,450

QUESTION NUMBER	RESPONSE					CONFIDENCE LIMIT	
	TOTAL	AVERAGE	MINIMUM	MAXIMUM	MEDIAN	UPPER LIMIT	CONF LEVEL (%)
1	22	-	-	-	-	-	
2	48	2.2	1	6	2	3	93.3
3 ACTIVE AF	5	-	-	-	-	-	-
3 ANG	17	-	-	-	-	-	-
4 INTERVIEW	6	-	-	-	-	-	-
4 QUESTIONNAIRE	16	-	-	-	-	-	-
5	31	1.4	1	8	1	-	-
6	291.38	10.8	.25	30	10	24 (A) 24 (I)	87.8 (A) 97.1 (I)
7	190.7	4.2	.5	9	3.3	4	93.3
8	0	0	0	0	0	-	-
9	0	0	0	0	0	-	-
10	0	0	0	0	0	-	-
11	1	.02	1	1	1	-	-
12	45.75	.95	0	7	0	7	87.5
13	25.5	.53	0	4	0	4	93.8
14	80.5	1.92	0	7	0	6	96.8
14A	32.75	.73	0	2	.75	-	-
14B	28.25	.67	0	2	1	-	-
15	6237	141.8	4	365	100	365 100	96.9(A) 98.2(I)
15A	401	9.1	3	16	8	8	94.2
16	125.5	3.5	0	13	2	5	95.2
17	169.5	3.5	0	11	3.5	11 4	96.9 (A) 96.6 (I)
17A TRUCK	4/4	-	-	-	-	-	-
17A MOBILIZER	18/44	-	-	-	-	-	-
17B CHAIN	1/1	-	-	-	-	-	-
17B CABLE	5/6	-	-	-	-	-	-
17B WEB SLING	0	-	-	-	-	-	-
17C CRANE	0	-	-	-	-	-	-
17C 407L	0	-	-	-	-	-	-
17C FORKLIFT	0	-	-	-	-	-	-
17C WRECKER	4/6	-	-	-	-	-	-
17D	20	.74	0	3	.2	1.5	96.7
17E	657.1	15.3	0	30	15	30 20	96.9(A) 98.2(I)
17F	8803	204.7	0	650	150	150 505	96.9 (A) 98.2(I)
17G	325.5	7.8	0	50	5	9	96.8
17H	50/68	1. 1/1.4	0/1	2/3	1/1	1	96.1
17I	909	20.2	6	59	17.5	30	96.1
18 YES	16/31	-	-	-	-	-	-
18 NO	0/0	-	-	-	-	-	-
19 YES	2/6	-	-	-	-	-	-
19 NO	0/0	-	-	-	-	-	-
20 YES	1/3	-	-	-	-	-	-
20 NO	14/24	-	-	-	-	-	-

TABLE 3.1-4: SUMMARY OF ANALYSIS OF AN/TRC-97 & AN/TSC-60
COMPARISON BETWEEN AF AND ANG UNITS

QUESTION NO.	RESULTS		CONCLUSION**	
	AN/TRC-97	AN/TSC-60	W-M-W	K-S
2	R* 10%	CR*	A=I***	-
5	CR*	N/A	A=I	-
6	CR*	R* 0.01%	A>I	-
7	R* 20%	CR*	A=I	-
8	CR*	-	A=I	-
9	-	-	-	-
10	CR*	-	A=I	-
11	-	-	-	-
13	-	CR*	A=I	-
14	CR*	CR*	A=I	-
15	R* 1%	R* 10%	A>I	-
15a	R* 20%	CR*	-	A=I
16	CR*	CR*	A=I	-
17	R* 1%	R* 20%	A>I	-
17d	CR*	CR*	A=I	-
17e	R* 10%	R* 20%	I>A	-
17f	R* 1%	R* 10%	I>A	-
17g	CR*	CR*	A=I	-
17h	CR*	CR*	A=I	-
17i	CR*	CR*	A=I	-

* R = REJECT CR = CAN'T REJECT
** The results of the two sided W-M-W test or the K-S test if the W-M-W test was inconclusive.
*** A = Active Air Force I = Air National Guard

TABLE 3.1-5: QUESTIONNAIRE SUMMARY FORM

EQUIPMENT TYPE

NO.	QUESTION
1	UNIT IDENTIFICATION NUMBER (IDENT NO.)
2	QTY OF EQUIPMENT AT THIS UNIT
3	UNIT TYPE: A = ACTIVE AF, I = AIR NATIONAL GUARD
4	SURVEY TYPE: I = INTERVIEW, Q = MAILED QUESTIONNAIRE
5	NUMBER OF PERSONNEL RESPONDING
6	AVERAGE NUMBER OF YEARS PERSONNEL LOCATED AT THIS UNIT
7	AVERAGE NUMBER OF YEARS EQUIPMENT LOCATED AT THIS UNIT
8	AVERAGE NUMBER OF HELILIFTS (PER YEAR)
9	AVERAGE NUMBER OF RAIL DEPLOYMENTS (PER YEAR)
10	NUMBER OF SHELTERS THAT HAVE BEEN SENT TO DEPOT FOR REPAIR
11	NUMBER OF SHELTERS THAT HAVE BEEN ACCIDENTLY DROPPED
12	NUMBER OF TIMES EQUIPMENT IS SETUP/TORN DOWN AT NIGHT (PER YEAR)
13	NUMBER OF TIMES EQUIPMENT IS SETUP ON JACKS (PER YEAR)
14	NUMBER OF TIMES EQUIPMENT IS SET UP ON UNEVEN TERRAIN (PER YEAR)
	a) MAXIMUM DIFFERENCE IN ELEVATION SIDE-TO-SIDE (FEET)
	b) MAXIMUM DIFFERENCE IN ELEVATION FRONT-TO-BACK (FEET)
15	NUMBER OF DAYS EQUIPMENT OPERATED AT HOME STATION (PER YEAR)
	a) AVERAGE NUMBER OF HOURS OPERATED (PER DAY)
16	NUMBER OF TIMES EQUIPMENT IS SETUP/TORN DOWN AT HOME STATION (PER YEAR)
17	NUMBER OF TIMES EQUIPMENT IS DEPLOYED (PER YEAR)
	a) MOBILIZING METHOD AND FREQUENCY (PER YEAR): T = TRUCK BED, M = MOBILIZER
	b) TIE DOWN METHOD: CH = CHAIN, CA = CABLE, W = WEB SLING
	c) LOADING/UNLOADING METHOD: F = FORKLIFT, 4 = 407L LOADING KIT, W = 5 TON WRECKER, C = CRANE
	d) AVERAGE NUMBER OF DEPLOYMENTS BY AIR (PER YEAR) IF AIRLIFT WAS INDICATED BUT NOT FREQUENCY INSERT LETTER Z
	e) AVERAGE DURATION OF DEPLOYMENT (DAYS)
	f) AVERAGE DISTANCE DEPLOYED ONE WAY OVER PAVED ROADS (MILES)
	g) AVERAGE DISTANCE DEPLOYED ONE WAY OVER UNPAVED ROADS (MILES)
	h) NUMBER OF PERSONNEL ON ROOF AT ONE TIME (NORMAL/MAXIMUM)
	i) AVERAGE NUMBER OF TIMES DOOR OPENED (PER DAY)
18	IS SHELTER FUNCTIONALLY ADEQUATE: Y = YES, N = NO
19	HAVE ANY PROBLEMS BEEN EXPERIENCED IN SHELTER: Y = YES, N = NO
20	ARE THERE ANY AREAS OF CONCERN WITH THE SHELTER: Y = YES, N = NO

1981. The recent increases in fuel costs and the projected future increases would indicate that rail deployments will increase.

Although the number of shipments by sea was not addressed in the unit surveys, it was addressed in the terminal surveys. The average number of shipments by sea for a shelter could not be ascertained, but the terminal survey did establish that they are shipped by this method. Furthermore, the observance of equipments being off-loaded from ships in Korea and the statements by personnel at the 1961st Comm Gp, Clark AB that their equipment was deployed by sea for operation Team Spirit indicates that shelters are currently being deployed by sea. The increase in fuel costs would indicate that the trend would be to ship and deploy by sea rather than by air if the schedule permitted it. Geographic considerations would indicate that sea deployments within PACAF, and sea deployments between CONUS and either PACAF or USAFE would occur more frequently than sea deployments within either CONUS or USAFE.

The U.S. Air Force, Tactical Air Command is currently conducting field tests at Langley AFB, Ramstein AB and Clark AB on mobile medical facilities. These facilities are utilizing 20' ISO's for the clinic, laboratory, pharmacy, X-ray, surgery, pre-op and dental areas. In addition, the U.S. Army 2:1 ISO has been set up as part of a mobile medical facility at Natick Labs. These circumstances would indicate that both the expandable and non-expandable ISO's will be used for future mobile medical facilities.

The HARVEST BARE rapid deployment system comprising 1,503 shelters utilizes shelters for food preparation, food storage and other non-electronic areas. Future updates of this system will utilize the standard family of shelters to house these functions.

The unit surveys include electronic equipments/systems that are housed in vans (e.g. V-83). The survey encompassed these equipments because future procurements of similar functions would probably be housed in the new 2:1, 3:1 or non-expandable 20' ISO's.

Although the number of responses did not indicate that deployment by helicopter occurred frequently, it is a requirement in USAFE that at least one equipment/year be helilifted to maintain proficiency. The demonstration of this requirement on a AN/TPB-1 was observed during the survey in USAFE.

Although the number of fordings was not included in the questionnaire, it was addressed during the personal interviews. The response to this query was always negative. The conclusion was that as far as Air Force equipment is concerned the shelter is never forded. Of course, during wartime this condition could change and the shelter should be designed to withstand the fording environment.

The survey disclosed that a large majority of shelters are off-loaded/loaded from truck beds utilizing the 5-ton wrecker. This method will continue to be used because it is in most cases the only method the units possess.

3.1.4 RESULTS

The Operational Mode Summaries presented in Appendix A are for the following equipment types and equipment functions:

EQUIPMENT	EQUIP. FUNCTION	DESCRIPTION
COMSEC	COMSEC	SURVEILLANCE EQUIPMENT
DSTE	DSTE	COMMUNICATIONS
ES-57, 58, 59, 73, 75	ES/FS	PHOTO RECON PROCESSING FACILITY
ES-60, 61, 63, 64, 72	ES/FS	PHOTO RECON PROCESSING FACILITY
FS-6	ES/FS	PHOTO RECON PROCESSING FACILITY
FS-7	ES/FS	PHOTO RECON PROCESSING FACILITY
MDC	MDC	COMMUNICATIONS
MDE	MDE	COMMUNICATIONS
N.C.M.O.	N.C.M.O.	COMMUNICATIONS
TTY/CRYPTO	TTY/CRYPTO	TELETYPE/CRYPTO COMMUNICATIONS
UCP/JOBC	UCP/JOB C	COMMUNICATIONS
V-83	V-83	SUPPORT VAN
AN/TCC-76	AN/TCC	CARRIER (WIRE) COMMUNICATIONS
AN/TCC-77	AN/TCC	CARRIER (WIRE) COMMUNICATIONS
AN/TGC-20	AN/TGC	TELEGRAPH OR TELETYPE COMMUNICATIONS
AN/TGC-26	AN/TGC	TELEGRAPH OR TELETYPE COMMUNICATIONS
AN/TGC-27	AN/TGC	TELEGRAPH OR TELETYPE COMMUNICATIONS
AN/TGC-28	AN/TGC	TELEGRAPH OR TELETYPE COMMUNICATIONS
AN/TGC-621	AN/TGC	TELEGRAPH OR TELETYPE COMMUNICATIONS
AN/TMQ-28	AN/TMQ	METEROLOGICAL, SPECIAL
AN/TPB-1	AN/TPB	RADAR, BOMBING
An/MPN-14	AN/TPN/MPN	RADAR, NAVIGATIONAL
AN/TPN-19	AN/TPN/MPN	RADAR, NAVIGATIONAL
AN/TPS-43	AN/TPS	RADAR, DETECTING AND/OR RANGE & BEARING
AN/TPS-44	AN/TPS	RADAR, DETECTING AND/OR RANGE & BEARING
AN/TRC-32	AN/TRC/MRC	RADIO COMMUNICATIONS
AN/TRC-36/61	AN/TRC/MRC	RADIO COMMUNICATIONS
AN/TRC-87	AN/TRC/MRC	RADIO COMMUNICATIONS
AN/TRC-96	AN/TRC/MRC	RADIO COMMUNICATIONS
AN/TRC-97	AN/TRC/MRC	RADIO COMMUNICATIONS
AN/MRC-113	AN/TRC/MRC	RADIO COMMUNICATIONS
AN/TRC-136	AN/TRC/MRC	RADIO COMMUNICATIONS
AN/GRM-9	AN/GRM	RADIO MAINTENANCE ASSEMBLES
AN/GRM-32	AN/GRM	RADIO MAINTENANCE ASSEMBLES
AN/GRM-48	AN/GRM	RADIO MAINTENANCE ASSEMBLES
AN/GRM-85	AN/GRM	RADIO MAINTENANCE ASSEMBLES
AN/GRM-94	AN/GRM	RADIO MAINTENANCE ASSEMBLES
AN/TRN-26	AN/TRN	RADIO, NAVIGATIONAL
AN/TRN-31	AN/TRN	RADIO, NAVIGATIONAL
AN/TSC-15	AN/TSC/MSC	SPECIAL COMMUNICATIONS
AN/MSC-22	AN/TSC/MSC	SPECIAL COMMUNICATIONS
AN/TSC-38	AN/TSC/MSC	SPECIAL COMMUNICATIONS
AN/TSC-53	AN/TSC/MSC	SPECIAL COMMUNICATIONS
AN/TSC-60	AN/TSC/MSC	SPECIAL COMMUNICATIONS

EQUIPMENT	EQUIP. FUNCTION	DESCRIPTION
AN/TSC-53	AN/TSC/MSC	SPECIAL COMMUNICATIONS
AN/TSC-60	AN/TSC/MSC	SPECIAL COMMUNICATIONS
AN/TSC-62	AN/TSC/MSC	SPECIAL COMMUNICATIONS
AN/TSC-88	AN/TSC/MSC	SPECIAL COMMUNICATIONS
AN/MSQ-10	AN/TSQ/MSQ/GSQ	SPECIAL COMBINATION OF TYPES
AN/TSQ-61	AN/TSQ/MSQ/GSQ	SPECIAL COMBINATION OF TYPES
AN/MSQ-91	AN/TSQ/MSQ/GSQ	SPECIAL COMBINATION OF TYPES
AN/TSA-35/TSQ-92	AN/TSQ/MSQ/GSQ	SPECIAL AUXILIARY ASSEMBLY
AN/TSA-34/TSQ-92	AN/TSQ/MSQ/GSQ	SPECIAL AUXILIARY ASSEMBLY
OA-8448/TSQ-92	AN/TSQ/MSQ/GSQ	OPERATING ASSEMBLY
AN/TSQ-93	AN/TSQ/MSQ/GSQ	SPECIAL COMBINATION OF TYPES
OA-8451/TSQ	AN/TSQ/MSQ/GSQ	OPERATING ASSEMBLY
An/GSQ-120	AN/TSQ/MSQ/GSQ	OPERATING ASSEMBLY
AN/TSW-7	AN/TSW	SPECIAL REMOTE CONTROL
AN/MTC-2	AN/MTC/TTC	TELEPHONE (WIRE) COMMUNICATIONS
AN/TTC-7	AN/MTC/TTC	TELEPHONE (WIRE) COMMUNICATIONS
AN/TTC-22	AN/MTC/TTC	TELEPHONE (WIRE) COMMUNICATIONS
AN/TTC-28	AN/MTC/TTC	TELEPHONE (WIRE) COMMUNICATIONS
AN/TTC-30	AN/MTC/TTC	TELEPHONE (WIRE) COMMUNICATIONS
AN/TYC-8	AN/TYC	COMMUNICATIONS
AN/TYC-10	AN/TYC	COMMUNICATIONS
S-138-TR	S-XXX	EQUIPMENT AND MAINTENANCE
S-141	S-XXX	SUPPORT SHELTERS
S-280	S-XXX	SUPPORT SHELTERS
S-517	S-XXX	SUPPORT SHELTERS
S-530	S-XXX	SUPPORT SHELTERS

The Summaries are a compilation of the questionnaire survey data on the 1,101 equipments/systems presented in Appendix C. The equipment function summaries are a compilation of all equipments with similar functions or nomenclatures. For instance, all non-nomenclatured shelters were grouped under the function maintenance and support shelter, all MRC-XXX and TRC-XXX were grouped under Ground Transportable Radio Communications and all TSC-XXX were grouped under Ground Transportable Special Communications.

The upper limit is the upper single-sided tolerance limit on the population. This limit was calculated using distribution-free methods. For sample sizes ≥ 50, the upper limit is the point where 90% of the population falls at or below the point shown with at least 0.90 confidence. For sample sizes <50, the upper limit is the point where 90% of the population lies at or below the point shown with at least α % confidence where α is given in parenthesis.

The operational mode summaries are one of the inputs used to develop the test profiles presented in section 4.0.

3.2 TEST COSTS

The test cost data and information presented in Appendix B were summarized and analyzed to derive cost estimates by test type. Eight estimates were received, five for tests called out in MIL-S-55286, one for the tests called out in specification DES-X-1-77 and two to rent environmental facilities or have

tests conducted at an environmental laboratory. These data were presented in many different forms and in some instances included transportation, outside consultant and test report costs. Several assumptions were made in order to convert the data into similar units so that a median base cost per test type could be calculated. These assumptions are presented below. The test cost data will be used in the development of the test profiles to select the most economic test if the test analysis shows that one or more tests can be used to test for the same failure mechanisms.

3.2.1 ASSUMPTIONS

(1) The median response is the best estimate of the true test cost.

(2) Tests that have a cost listed for environmental facilities, test courses or consultants could be conducted in-house or at an external facility. The cost data given for these tests were segregated into in-house and external costs. If the data could not be segregated, all of the costs were placed under the cost to use an external facility. For either case (in-house or external) the basic cost and the cost to rent a facility or hire a consultant would be summed to derive the total test cost. The data were segregated because there may be instances where the same test facility could be used for two tests.

(3) Test report costs were segregated because a test report is required whether one or many tests are conducted.

(4) The estimates do not include any cost for direct/indirect involvement of government personnel for actions such as witnessing tests or approving test plans and test results.

(5) One time facility costs were disregarded since they would be depreciated over many tests and their contribution to a single test would be minimal.

(6) Where the term 'small' was given as a cost, one hour of shop labor was used.

(7) The test cost data were supplied in either labor hours plus material costs or in total costs. Two equations were used to convert labor hours into labor costs. The equations used are:

Engineering labor ($) = Engineering labor (Hrs) X $11.00/Hr (labor rate) X 2.0 (overhead adjustment)

Shop labor ($) = Shop labor (Hrs) X $5.00/Hr (labor rate) X 2.0 (overhead adjustment).

(8) The data represent the cost to test a single unit unless otherwise noted.

(9) For summarization purposes the following tests are cost equivalent:

DES-X-1-77	NAME OF TEST	MIL-S-55286C
4.6.6	MOISTURE RESISTANCE	4.6.17
4.7.12	TEMPERATURE	4.6.18

4.7.3	VEHICULAR TRANSPORT	4.6.21
4.7.4	RAIL TRANSPORT	4.6.22
4.7.11	CONSTRUCTION TIGHTNESS	4.6.10
4.6.8	IMPACT PANEL	4.6.7
4.7.5	AIR TRANSPORT, SIMULATED	4.6.26
4.8.10	ROOF ACCESS STEPS	4.6.28
4.8.8	LIGHT TIGHTNESS	4.6.29
4.7.2	DROPS	4.6.23
4.8.5	WATER TIGHTNESS	4.6.31
4.8.4	STATIC DOOR LOAD	4.6.27

3.2.2 COST ESTIMATES

The summarized data are presented in Table 3.2-1. The mean and median are presented as estimates of central tendency. The median estimate will be used in the development of the least cost test profiles. Transportation costs are to transport a single shelter. To derive a total test cost for a specific test or group of tests, the following procedure is used: Sum the In-house test cost plus the cost for an environmental Lab or consultant (if listed in the table) plus the cost for a test report (if required) plus the cost for transportation (if required). For example, EMI Suppression test costs conducted in-house are $243 + $800 + $88 = $1,131; Roof Access Test costs (Report required) are $243 + $30 = $273; Marine Atmosphere test costs conducted at a remote environmental Lab are $243 + $1800 + $0 + $4500 = $6543. The test report cost given in the examples is for a test report on an individual test; however, the total costs for test reports for a complete test program should not exceed $5,528.

A test was run using the median estimates against the cost estimates provided by respondent 5 for the following tests: Moisture Resistance (4.6.17), temperature (4.6.18), Thermal Differential (4.6.19) and a certified test report. The result using the median estimates was $22,933 versus the $19,760 estimate provided by respondent 5. This represents a 16% error which is acceptable.

3.3 TEST ADEQUACY AND SEQUENCING

The specifications and standards listed in Table 2.3-1 were reviewed to determine the tests and inspections that have historically been imposed on shelter procurements. This review was used to insure that no currently specified test/inspection was being overlooked in this study.

An analysis of the geographical deployment data obtained during the survey indicated that most equipment types are deployed worldwide during all seasons of the year; therefore, they could routinely experience extreme climatic conditions. The current environmental tests imposed in MIL-STD-XXXX (Ref 26) were compared with the climatic extremes presented in MIL-STD-210B (Ref 27) for the ground environment. The results of the comparison are presented below.

The temperature range test (Test paragraph 5.2.6) was found to exceed the expected temperature extremes called out in MIL-STD-210B by a large safety margin. The high test temperature would be expected to occur during deployment less than once during 25 years of operation. The low test temperature meets the 10% risk criteria called out in MIL-STD-210B for low temperature testing and exceeds the recommended 20% risk condition (-65°F).

TABLE 3.2-1: TEST COST ESTIMATES

TEST	TEST ** PARAGRAPH	*** NO.	CY81 DOLLARS ($1000) TOTAL	MIN	MAX	MEAN	MEDIAN
TRANSPORTATION	-	2	9.000	2.000	7.000	4.500	4.500
TEST REPORTS							
TEST REPORT SINGLE TEST	-	2	0.485	0.133	0.352	0.243	0.243
TEST REPORT TEST PROGRAM	-	2	11.056	1.200	9.856	5.528	5.528
ENVIRONMENTAL LABS OR CONSULTANTS							
EMC SUPPRESSION	4.6.30	3	3.800	0.500	2.500	1.267	0.800
MOISTURE RESISTANCE	4.6.17	6	47.000	2.000	12.000	1.267	9.500
TEMPERATURE	4.6.18	6	28.300	2.400	7.500	4.717	4.700
THERMAL DIFFERENTIAL	4.6.19	6	17.800	1.800	3.800	2.967	3.000
VEHICULAR TRANSPORT	4.6.21	4	15.500	1.000	7.000	3.875	3.750
RAIL TRANSPORT	4.6.22	3	11.000	3.000	4.000	3.667	4.000
AIR TRANSPORT SIMULATED	4.6.26	5	2.898	0.150	1.000	0.580	0.600
MARINE ATMOSPHERE	*4.6.9	1	1.800	1.800	1.800	1.800	1.800
THERMAL SHOCK	*4.6.7	1	3.200	3.200	3.200	3.200	3.200
HEAT TRANSFER	*4.8.6	1	8.400	8.400	8.400	8.400	8.400
SOLAR LOAD	*4.8.7	1	1.200	1.200	1.200	1.200	1.200
IN-HOUSE TEST COSTS							
CONSTRUCTION TIGHTNESS	4.6.10	5	0.921	0.010	0.435	0.184	0.176
VISUAL AND MECHANICAL	4.6.14	1	0.010	0.010	0.010	0.010	0.010
DIMENSIONAL	4.6.13	2	0.030	0.010	0.020	0.015	0.015
DOOR LATCH TORQUE	4.6.16	4	0.190	0.015	0.100	0.048	0.038
EYE PULLS	4.6.25.1	5	3.275	0.020	2.255	0.655	0.300
AIR TRANSPORT, SIMULATED	4.6.26	5	0	0	0	0	0
STATIC DOOR LOAD	4.6.27	5	0.760	0.010	0.600	0.152	0.030
ROOF ACCESS STEPS	4.6.28	5	0.360	0.010	0.200	0.072	0.030
LIGHT TIGHTNESS	4.6.29	5	0.370	0.005	0.240	0.074	0.015
WATER TIGHTNESS	4.6.31	5	1.868	0.020	0.800	0.374	0.300
FORDING	4.6.32	4	1.364	0.096	0.800	0.338	0.300
DROPS	4.6.23	6	3.328	0.192	0.800	0.555	0.600
EMI SUPPRESSION	4.6.30	2	0.176	0	0.176	0.088	0.088

TABLE 3.2-1: TEST COST ESTIMATES (CONT'D)

TEST	TEST ** PARAGRAPH	*** NO.	CY81 DOLLARS ($1000) TOTAL	MIN	MAX	MEAN	MEDIAN
HOLD DOWN ASSEMBLY	4.6.33	2	1.880	0.350	1.530	0.940	0.940
CORE MATERIAL							
FLAMMABILITY	4.6.14	1	0.196	0.196	0.196	0.196	0.196
WATER ABSORPTION	4.6.15	2	0.896	0.196	0.700	0.448	0.448
ADHESIVE							
HUMIDITY EXPOSURE	4.6.2	2	1.116	0.416	0.700	0.558	0.558
SALT SPRAY EXPOSURE	4.6.2	2	1.291	0.416	0.875	0.646	0.646
SHOCK MOUNT COMPLETE	4.6.3.1	1	2.000	2.000	2.000	2.000	2.000
IMPACT PANEL	4.6.7	2	2.760	0.360	2.400	1.380	1.380
MOISTURE RESISTANCE	4.6.17	4	0.704	0	0.704	0.176	0.176
TEMPERATURE	4.6.18	3	0	0	0	0	0
THERMAL DIFFERENTIAL	4.6.19	3	0.088	0	0.088	0.029	0.029
VEHICULAR TRANSPORT	4.6.21	2	1.656	0	1.656	0.828	0.828
RAIL TRANSPORT	4.6.22	2	2.184	0.528	1.656	1.092	1.092
TOWING, SIMULATED	4.6.24	4	2.180	0.080	1.000	0.545	0.550
SHELTER WEIGHT	4.6.15	2	0.628	0.128	0.500	0.314	0.314
IN-PROCESS INSPECTION	TABLE 3	1	0.020	0.020	0.020	0.020	0.020
STRUCTURAL SOUNDNESS	4.6.5	1	0.010	0.010	0.010	0.010	0.010
INSERT PROOF LOAD	4.4.4.3/ 4.1.2	1	0.460	0.460	0.460	0.460	0.460
ISO REQUIREMENTS	4.7.5/ 4.7.9	1	11.000	11.000	11.000	11.000	11.000
PANEL WATER TIGHTNESS	4.6.1	1	0.290	0.290	0.290	0.290	0.290
POST TEST INSPECTION	4.9	1	0.200	0.200	0.200	0.200	0.200
FINISH & OPERABILITY INSPECTION	-	1	0.200	0.200	0.200	0.200	0.200
FORKLIFT HANDLING	-	1	2.000	2.000	2.000	2.000	2.000
ERECTION AND STRIKE	4.8.9						
A. THREE TIMES		1	1.600	1.600	1.600	1.600	1.600
B. ONCE ON SLOPE		1	0.600	0.600	0.600	0.600	0.600
MARINE ATMOSPHERE	4.6.9	1	0	0	0	0	0
THERMAL SHOCK	4.6.7	1	0	0	0	0	0
TOWING	4.71	1	0.580	0.580	0.580	0.580	0.580

TABLE 3.2-1: TEST COST ESTIMATES (CONT'D)

TEST	TEST ** PARAGRAPH	*** NO.	CY81 DOLLARS ($1000) TOTAL	MIN	MAX	MEAN	MEDIAN
ELECTRICAL	4.8.1	1	0.010	0.010	0.010	0.010	0.010
ROOF LOAD	4.8.2	1	0.800	0.800	0.800	0.800	0.800
FLOOR LOAD	4.8.3	1	0.900	0.900	0.900	0.900	0.900
HEAT TRANSFER	4.8.6	1	0	0	0	0	0
SOLAR LOAD	4.8.7	1	0	0	0	0	0

* DES-X-1-77
** MIL-S-55286C unless otherwise noted
***No. Of Responses

The wind velocity requirement at 120 mph gusts called out in MIL-STD-XXXX does not meet the withstanding requirement of MIL-STD-210B at 10% risk for 15 years expected deployment for a horizonal dimension of 25 feet of approximately 300 fps (205 mph).

The sand and dust, high humidity and snow load conditions (Test paragraphs 5.2.9, 5.2.4, 5.3.5) were compared with the expected climatic conditions called out in MIL-STD-210B and were found to be approximately the same. There is no low humidity requirement or test called out in MIL-STD-XXXX. Conversations were held with personnel at the Air Force Materials Lab, Wright-Patterson AFB and with the RADC Contract Monitor to determine if a low humidity requirement is necessary. It was the opinion of these personnel that there are no failure mechanisms associated with shelters that would be accelerated in a low humidity environment; therefore, no low humidity requirement is necessary.

The watertightness test of MIL-S-55286D paragraph 4.6.30 was compared with the rainfall rate called out in MIL-STD-210B. The rainfall rate and velocity adequately simulates both the heavy wind blown rainfall requirement of MIL-STD-210B at 10% risk for 15 years deployment of approximately 5.5 inches/hour at 22 mph. The watertightness test also adequately simulates the washing of a shelter with a low pressure hose.

One document (Ref 30) was obtained that contained actual stress measurements during various portions of the Ground Transportability test. There were up to 15 gages mounted in the shelter and two mobilizer types were used (ISO and XM832). A comparison of the peak accelerations (g's) and frequencies measured during each course type was made. The highest and average peak acceleration and highest and average frequency recorded for each course type follows:

ISO MOBILIZER

COURSE	PEAK ACCELERATION(G) HIGHEST	PEAK ACCELERATION(G) AVERAGE	FREQUENCY (HZ) HIGHEST	FREQUENCY (HZ) AVERAGE
BELGIAN BLOCK AT 8.94 m/s	1.23	0.76	3.85	3.48
6-INCH WASHBOARD AT 1.79 m/s	0.87	0.42	2.50	1.53
RADIAL WASHBOARD AT 6.70 m/s, RIGHT TURN	2.35	1.06	5.55	5.13
RADIAL WASHBOARD AT 6.70 m/s, LEFT TURN	3.35	1.52	6.25	4.64
2-INCH WASHBOARD AT 4.47 m/s	3.22	1.44	9.99	4.53
SPACED BUMP AT 8.94 m/s	3.43	1.54	7.14	3.63

XM 832 MOBILIZER

COURSE	PEAK ACCELERATION(G) HIGHEST	AVERAGE	FREQUENCY (HZ) HIGHEST	AVERAGE
BELGIAN BLOCK AT 8.94 m/s	1.96	1.06	12.50	5.62
6-INCH WASHBOARD AT 1.79 m/s	0.99	0.52	2.94	1.29
RADIAL WASHBOARD AT 6.70 m/s, RIGHT TURN	2.78	1.93	25.0	11.80
RADIAL WASHBOARD AT 6.70 m/s, LEFT TURN	3.25	1.72	8.33	5.20
2-INCH WASHBOARD AT 4.47 m/s	2.56	1.60	25.0	10.42

The ISO mobilizer and the XM 832 mobilizer gave approximately the same peak acceleration measurements; however, the frequencies recorded on the XM-832 were consistantly higher. The spaced bump course gave the highest peak acceleration recorded and the highest average peak acceleration recorded.

The data tends to confirm that no two shelter facilities or shelter facility designs will respond exactly the same to the loads imposed by ground mobility. The type, weight and mounting technique of the equipment, the modifications made to the shelter design in order to accommodate the equipment, and the transport type will cause a shelter to respond differently to the same basic load. As can be seen by the stress measurements, the different course types subject the facility to a wide range of frequencies and loads giving a high confidence that any resonant frequencies will be imposed during the test. No data were obtained to validate whether the course length(s) are adequate to impose sufficient stress on the facility to insure that the damage imposed at resonancy will be discovered.

A second effort conducted concurrently by the Test Engineering Group at IIT Research Institute concentrated on the test adequacy and sequencing and was limited to the specifications governing the standard family of shelters. The tests for the standard family of shelters are detailed in specifications (references 17-24) and in the proposed JOCOTAS specification (reference 25). This effort is described below.

The expected general operational life profile for a shelter was hypothesized. The specifications (references 17-25) were reviewed for content, specifically with the view to answering questions of: test adequacy, test necessity and location of the test within the test sequence, in order to determine their ability to emulate the hypothesized life profile. Each test of each specification was examined for the three criteria stated above wholly within the context of the test specification itself.

A review of the nine specifications as to the principle test parameters, and comments are contained in Appendix H. Additional documents that were reviewed are given in Appendix H references 9-24.

During the specification reviews, all dimensional checks were assumed to be quality control compliance category and were excluded from specific consideration here. They are lumped together, called adequate and should be performed for compliance with the procurement.

The information derived from these analyses were used as an input in the development of the test profiles.

3.4 GENERAL SHELTER DATA/INFORMATION SUMMARY

Twenty-four published test reports were reviewed and summarized to extract reliability problem information encountered during operational tests, and also to gain a better understanding of the operational capabilities and deficiencies inherent to various tactical equipments. The data extracted from these reports aided in the development of the test profiles.

An analysis of reliability and maintenance data obtained from the comments elicited during the interviews and from the User Questionnaires, from review of Operational Test Reports and from review of other published documents did not provide an adequate database to allow for a rigorous correlation between the operational mode summaries and actual reliability/maintainability problems experienced during operation and testing. A qualitative evaluation was conducted. The results of this evaluation are presented below.

Comments elicited during the interviews and from the User Questionnaires, and information extracted from Operational Test Reports showed that failures occur in shelter facilities that would not have occurred during shelter testing; for example, equipment rack pulling out of the wall during the rail transport test, antennae mounts damaged by sling during lift, weak air conditioner mounts, etc.

Comments given during the interviews and from the User Questionnaires, and data extracted from reference 31 indicated a high incidence of delaminations on the shelter roof and on the floor panel directly inside the door. The Operational Mode summaries show a high traffic pattern through the door (median 3,500/year) and therefore a considerable number of foot impacts on the panel directly inside the door. The Operational Mode Summaries also show that there is a considerable amount of personnel traffic (2 persons average per action) on the roofs of the shelters to install antennae, camouflage the shelter, to load/off-load the shelter from the transport, for inspection/maintenance and for erection/striking. The delaminations may be attributed to these traffic patterns. Comments made during the interviews revealed several problems with door hinges, door latches and door seals. These problems were not associated with one particular equipment type. The median response for the number of door openings/closings per year for those equipments experiencing problems with door latching mechanisms, hinges and seals was approximately three times the median for all equipments.

Several comments were made during the interviews in USAFE concerning the inspection of lifting rings prior to a helilift demonstration. There is a

requirement to inspect the rings using magnaflux or dye penetrant. They expressed concern over the amount of time involved in removing the paint and thought that a paint free ring or a removable ring would decrease the maintenance time considerably.

The information extracted from the reports and a listing of the summarized reports is contained in Appendix G. The information elicited from the interviews and questionnaires is contained in Appendix D. The information derived from this analysis was used as an input in the development of the test profiles.

3.5 ACCELERATED RELIABLITY TEST

This section describes an analytical approach to accelerated reliability testing of a tactical shelter facility. A tactical shelter facility is defined herein as a tactical shelter and the tactical equipment housed within it. (Reliability is defined as the probability that the shelter will function during a tactical mission for a specified period of time without a relevant failure.) A relevant failure is defined as material failure that renders the shelter incapable of performing its tactical mission (e.g. broken lifting ring for a helilift mission, broken mobilizer mount for a road deployment, etc.) or to adequately shield the equipment from the environment. A non-relevant failure is defined as any human induced failure or any material failure that degrades the cosmetic appearance of the shelter but does not render the shelter incapable of performing its tactical misssion, or to adequately shield the equipment from the environments.

The purpose of the accelerated test is to artificially age the shelter facility by either overstressing it for a period of time by increasing the number of occurrence per unit of time, or statistically, via large sample sizes thereby decreasing time of failure or by accelerating time. The first two methods require a large testing facility and a vast amount of data on failure mechanisms, activating stresses, relationships between stress and failure mechanism and synergistic effects. The data required to conduct this type of test is currently not available probably due to the extensive amount of testing that would be required to generate it. The method proposed is the third method which can only be accomplished by computer simulation. The technique proposed is the Finite Element Method (FEM).

The Finite Element Method of computer simulation was investigated to ascertain its applicability as a substitute for an accelerated shelter facility reliability test. A discussion of the investigative process and the FEM technique is described in the following paragraphs.

3.5.1 FINITE ELEMENT METHOD (FEM)

The FEM has been investigated thru a literature review to answer the current state-of-the-art and the potential use as a tool in economically determining the reaction of shelters to the test and life profiles described in this report.

3.5.1.1 FEM MODELING

Very briefly, in FEM modeling, the structure to be analyzed is represented by a mesh of elements interconnected at node points whose coordinates must be determined. Assigned to each element are material properties such as Young's

Modulus and Shear Modulus, and stiffness properties such as moment of inertia, torsional constant, and shear-area ratio. The preceding information and load data when computer processed by programs such as NASTRAN provides the deflection of each node point in three dimensional space and the internal stress distributions.

The preceding describes the analysis of static loads or a single pulse dynamic load and the resulting deflection of a structure. Of greater interest to this study are FEM computer programs which will predict time to failure based on time/stress dependent changes in the structure. Critical elements of such a program would include an algorithm for basic material response, a cyclic hardening or softening module, creep and stress relaxation, and a damage accumulation model.

3.5.1.2 LITERATURE SEARCH

A Defense Technical Information request for a search on the first level terms of "finite element method" and "numerical analysis" identified 732 reports and provided associated abstracts. A review of the Applied Science and Technology Indexes revealed 487 titles from 1977 to date. FEM was first indexed in ASTI in 1977.

A review of the totality of these papers would have been imposible within the constraints of the present program. In order to reduce the mass to a tractable size a title would be ordered if it appeared to satisfy one of the following criteria: application oriented, shelter or thin wall structure related, damage model component in program.

This resulted in the identification of 24 items found to be of sufficient value to review for this report.

3.5.1.3 LITERATURE REVIEW

Reference 3
Abstract.

This paper descibes a mathematical investigation of the crash impact responses of an all-composite helicopter cockpit section incorporating an energy absorbing concept and one of conventional aluminum construction, using the Grumman DYCAST finite element nonlinear structural dynamics computer program. The overall objective of this initial investigation was to explore the application of DYCAST to the design of future helicopter structures. The specific purposes were to assess the finite element codes as a crashworthiness design analysis tool, and to compare the responses of the two fuselage sections. The results indicate that the finite element simulation is a powerful analysis tool, providing sufficient detail to evaluate individual structural components, and that the crash worthiness of an all-composite cockpit section could be enhanced with energy absorbing concepts.

REVIEW COMMENTS.

At first glance the relationship and importance of an FEM applied to a helicopter may not be obvious. However, this application points to a way in

which FEM may be used to forecast 15 year life particularly where transportation stress (rail and drop impact loads) might be frequent events.

DYCAST differs from NASTRAN in that the changing stiffnesses in the structure are accounted for by plasticity (material nonlinearity) and very large deflections (geometric nonlinearity). The plasticity enters the model through the nonlinear stress-strain curve for each element. The geometric nonlinearities are modeled by reforming the structure into its new shape after small time increments, while accumulating deformations, strains, stresses, and forces. In this way, the progressive crushing and folding of structural elements can be followed. The nonlinearities due to combined loadings (such as beam-column effects) are maintained, and the stiffness of the elements will vary with time, depending upon the combination of loads imposed on them.

The primary output data for the simulation consisted of printed data at time intervals varying from 20 to 230 μs, and a digital magnetic tape of the complete motions at all the nodes at each time increment. From each tape, approximately 30 traces of displacement, velocity, and acceleration histories were automatically machine-plotted for certain selected nodes, including the crew and equipment masses.

From the same tapes, approximately 100 machine drawings were generated showing the deformed state of each structure at many time intervals for different views. These views included several of the entire structure, plus one each of the major subsections (bulkheads, main beams, skin panels, etc.). In this way a comprehensive qualitative and quantitative picture of damage was obtained.

Reference 4
Abstract.

An analytical and experimental study of the stress and strain history at stress risers was conducted to evaluate the effects of time-and cycle-dependent changes on the fatigue life of aluminum alloy structures. This report covers Phase II of a two-phase program. Both creep and stress relaxation were modeled and measured. An elastic-plastic finite element code simulation was utilized to model the nonlinear stress-strain field around the stress riser and to model creep during sustained load hold periods.

A four-part experimental program was conducted to generate constitutive data necessary for the formulation of a hysteresis analysis model. The experimental program included simple coupon specimens, a unique simplified stress concentration specimen, center circularly notched super-scale specimen, and notched fatigue specimens. Complex, load time test sequences and flight-by flight spectrum loadings representative of transport aircraft loads were used in the program.

Significant creep and stress relaxation was measured during the experimental program. These data were used in the development of creep stress relaxation module for the hysteresis analysis. The automated hysteresis analysis developed during this program includes a material hardening/softening module, a creep/stress relaxation module, locus and branch curve definition for the stable material reponse, and a damage accumulation module. Correlation studies have been conducted using this analysis as well as a linear damage analysis method to

compare predicted versus actual specimen life and have shown acceptable correlations.

REVIEW COMMENTS.

This reference demonstrates the capability of an FEM to model damage accumulation, predict crack initiation and growth, and fatigue failure. As noted in paragraph 2 of the abstract, the loads were representative of transport aircraft flight profiles including landing and taxiing. The potential application to shelter life profile survival are readily apparent.

Reference 5
Abstract.

Structural finite element models of the Army Command, Control, and Communication Systems AN/TRC-117, AN/TRC-110, AN/TCC-61 which utilize the S-280 shelter, and the AN/TRC-145 and AN/GRC-142B, which utilize the S-250 shelter, were developed for NASTRAN. Loading models and dynamic response for overpressure levels experienced in the recent DICE THROW field test were determined for all but the AN/GRC-142B. Comparisons between measured and analytical accelerations are given for the AN/TRC-117 and the AN/TRC-145 at an incident overpressure level of 41.4 kPa. The comparisons were generally poor for the AN/TRC-117 but much more favorable for the AN/TRC-145.

REVIEW COMMENTS.

The lack of agreement between measured and analytical accelerations for the AN/TRC-117 (S-280) and the more favorable agreement for the AN/TRC-145 (S-250) can probably be explained by the inability of the NASTRAN model to reconfigure the structure as damage progressed and stiffness was reduced. A model based on DYCAST would have been a better choice in this regard.

The reference highlights the importance of including all shelter modifications including racks and installed equipment in the model due to their impact on the response of the structure to applied loads. This is consistent with and reinforces the recommendations of this study regarding facility level testing.

Reference 6
Abstract.

A finite element analysis of a 2.4 m X 2.4 m X 6.1 m (8 ft X 8 ft X 20 ft) 3-for-1 expandable ISO Army Shelter has been made for static loads designated in the specifications for Army ISO Tactical Shelters. The report includes a description of the load paths, an investigation of the load-carrying capability of the structure both with and without wall panels as structural members, recommendations for improving the design for static load response, a buckling analysis for the ISO stacking test, and a comparison of calculated and measured data for a series of tests performed on the prototype shelter analyzed in this report.

REVIEW COMMENTS.

This reference differs from the previous references in that it treats only the case of deflection under static loads. It is well written and provides a good understanding of what is involved in applying FEM to the analysis of a shelter.

The results of the analysis show the value of the method during the design stage. It was found that marginal conditions existed at the bottom end of the corner posts during top lift of the shelter due to deflection of the cargo floor. These deflections were also large enough to damage the nonstuctural hinges which connect the fold-out panels to the floor.

Reference 7
Abstract.

A comparison of stresses calculated using the ABS/DAISY system with those measured on board the SL-7 Container ship is undertaken to verify the analytical procedures used in assessing the strength of ships in a seaway. The comparisons and evaluations are performed for four different and progressively more severe technical conditions: dockside calibration, RMS stresses in head seas, instantaneous stresses in head seas and instantaneous stresses in oblique seas.

The overall comparison between calculated and measured stresses for the dockside calibration is good where thermal effects were small but inconclusive elsewhere. The comparison of RMS stresses in head seas is generally satisfactory, using both the spectrum analysis approach and the equivalent regular wave approach, and the comparison of instantaneous stresses in head seas and in oblique seas is also good for the wave conditions considered.

The results show that the existing analytical tools for predicting wave loads and structural responses are suitable to assess the overall strength of the hull-girder. All the measured and calculated hull-girder stresses are of low magnitude, and no modifications to the present hull-girder strength standard are deemed necessary.

REVIEW COMMENTS.

While this reference would appear to have no relationship to shelters, it does consider thermal stresses and the lack of agreement between calculated and measured stresses when these stresses are not considered by the FEM. In this study a temperature difference of 15°F between port and starboard sides and 21°F between the deck and sea water were recorded. The resulting thermal stress was estimated to be 1500 psi.

These stresses exist in shelters which may see a summer sunny day side-to side temperature differential of 30° to 40°F. These stresses, for shelters, must be considered dynamic in nature during the course of 24 hours. The effects of these stresses should be considered in shelter test design and shelter life considerations due to possible effects on skin-foam bonds and panel-panel seals.

3.5.1.4 SUMMARY

It can be seen from the few references presented and described that the FEM is progressing from a method capable of analyzing static load deflections, towards a method with considerable promise for predicting structural performance over a life time. One of the more recent developments (Ref: 15) is the ability to combine component test data with FEM analysis into one single computer model. For shelters, the test data would include information on seals, gaskets, hinges, latches, etc.

In the past the FEM was expensive and used in the main by the aerospace and nuclear industries where precise analysis regardless of cost was required. Now, the computers and software programs are available thru time-sharing and leasing at low cost. At the same time, the minicomputers and terminals used as aids in modeling and data display are more powerful and less expensive than ever. At the same time modeling techniques have been developed to provide accurate results with reduced labor and computer costs.

4.0 LEAST COST TEST PROFILES

This section lists the recommended test program for rigid wall tactical shelters. Five separate test profiles were recognized as being necessary to adequately test the basic shelter and the shelter facility.

The test profiles list the test type, the applicable test specification/standard and paragraph and the sequence of the test in the program. The profiles are based on the results of the analyses in Section 3.0.

The profiles and the applicable tables are:

PROFILE	TABLE
Shelter Development	4-1
Shelter First Article	4-2
Shelter Production	4-3
Shelter Facility First Article	4-4
Shelter Facility Production	4-5

The first three test profiles are imposed on shelter procurements and are the responsibility of the shelter manufacturer. The last two are imposed on system procurements and are the responsibility of the system integrator. The shelter facility listed above is defined as the shelter and the equipment housed within it.

This program was developed based on the following assumptions about future Air Force tactical system procurements:

1) All rigid wall tactical shelters utilized by the Air Force willbe one of the following standard types:

   S-280
   S-250
   S-530
   20' ISO
   10' ISO
   20' ISO Knockdown
   2:1 ISO
   3:1 ISO

2) All future shelter procurements will be made in large quantities.
3) All shelters will be shipped to a centralized warehouse.
4) System Integrators will be furnished shelters from the centralized warehouse as Government Furnished Equipment (GFE).

These assumptions are based on dicussions with the RADC technical monitor.

An overall test program consisting of the five profiles listed above is not the most economical program that could be developed. The most economical program would delete the operational shelter tests since the response of a shelter to the

Cont'd on page 68

TABLE 4-1: SHELTER DEVELOPMENT TEST

TEST DESCRIPTION	SEQ	FOAM & BEAM PARAGRAPH MIL-S-55286D	HONEYCOMB PARAGRAPH CP 550100-E	EITHER PARAGRAPH MIL-STD-XXXX
CORE MATERIAL[1]	-	4.6.1	4.2.1.3.2.3	
DENSITY	-	4.6.1.1		
COMPRESSIVE STRENGTH	-	4.6.1.2	4.2.1.3.2.3 a(4)	
SHEAR STRENGTH	-	4.6.1.3	4.2.1.3.2.3 a(1)	
FIRE RESISTANCE	-			5.3.1
WATER ABSORPTION	-	4.6.1.5	4.2.1.3.2.3 a(5)	
DYNAMIC POINT LOAD[2]				TBD
ADHESIVE[1]	-	4.6.2	4.2.1.3.2.2	
SEALER[1]	-	4.6.2	4.2.1.3.2.1	
SHOCK MOUNTS[1,3]	-	4.6.3.1		
HOLD DOWN ASSEMBLY	-	4.6.32		
EYE ASSEMBLIES[1,3]	-	4.6.24.2		
PART INTERCHANGEABILITY[1]	-			4.8
SUNSHINE[1]	-			5.2.11
FUNGUS[1]	-			5.3.2
BLOWING SAND[1]	-			5.2.9
WEATHER SEALS[1]	-			5.2.1
CORROSIONS[1]	-			4.15
TOXICITY[1]	-			4.18
IMPACT RESISTANCE[1]	-			5.3.14
INSPECTION[4]	1			4.6,4.9, 4.10, 1-6
ISO REQUIREMENTS	2			5.1.1
PANEL FLATNESS	3			5.3.4
SHELTER SQUARENESS	4			5.3.3
SHELTER WEIGHT	5			4.7
LIFTING AND TOWING EYE STRENGTH	6			5.3.10
PANEL ATTACHMENT POINTS	7			5.3.8
RAIL TRANSPORT	8			5.1.4
AIR TRANSPORTABILITY	9			5.1.2
GROUND MOBILITY	10			5.1.3
FORKLIFT HANDLING	11			5.1.5
ALTITUDE	12			5.2.10
ERECTION AND STRIKING[5]	13			5.1.6
TOW/DRAGGING SIMULATION	14			5.3.11
DROP TESTS	15			5.3.12, 5.3.13
AIR TIGHTNESS[7]	16			5.2.2
INTERNAL WATER TIGHTNESS	17			TBD
WATER TIGHTNESS[2,7]	18	4.6.30		
TEMPERATURE RANGE	19			5.2.6
SOLAR LOAD	20			5.2.12

TABLE 4-1: SHELTER DEVELOPMENT TEST (CONT'D)

TEST DESCRIPTION	SEQ	FOAM & BEAM PARAGRAPH MIL-S-55286D	HONEYCOMB PARAGRAPH CP 550100-E	EITHER PARAGRAPH MIL-STD-XXXX
HEAT TRANSFER	21			5.2.8
MARINE ATMOSPHERE	22			5.2.5
HUMIDITY RESISTANCE	23			5.2.4
SNOW LOADS	24			5.3.5
ROOF LOADS	25			5.3.5
DOOR LOADS	26			5.3.7
FLOOR LOADS	27			5.3.6
DOOR LATCH TORQUE[3]	28	4.6.16		
ROOF ACCESS STEPS	29	4.6.27	3.2.2.10	
LEVELING DEVICES	30			5.3.9
BLACKOUT	31			5.2.3
EMI PROVISIONS[7]	32			5.3.15
ANCHORING[1,4,6]	-			1-2
SPECIAL TOOLS/KITS[1,6]	-			4.9
ICE LOADING [1,6]	-			4.13
WIND VELOCITY [1,6]	-			4.14
LIGHTNING PROTECTION[1,6]	-			4.17
HUMAN ENGINEERING [1,6]	-			4.16
LIGHTING PROVISION [1,6]	-			4.11
INPUT/OUTPUT PANELS AND OPENINGS [1,4,6]	-			3-11
MECHANICAL AND VISUAL[1] INSPECTIONS	-	4.6.4,4.6.5, 4.6., 4.6.9	4.2.1.1.1	

NOTES:

1) SEQUENCE NOT IMPORTANT
2) NEW TEST TO BE DEVELOPED
3) USE THIS TEST FOR EITHER CONSTRUCTION
4) PARAGRAPH NOS. 1-6, 1-2 AND 3-11 ARE PAGE NUMBERS IN JOCOTAS DRAFT, APRIL 1980
5) EXPANDABLE AND KNOCKDOWN SHELTERS ONLY
6) VALIDATE BY ANALYSIS
7) IN ANY TEST PROFILE, DEVELOPMENT, FIRST ARTICLE, FACILITY PRODUCTION, ETC., EXPERIENCE HAS INDICATED THAT SHELTER OR FACILITY INTEGRITY CAN BE CHECKED BY CONDUCTING EMI, AIRTIGHTNESS, AND WATERTIGHTNESS, IN THIS SEQUENCE, AS THE LAST TESTS BEFORE ACCEPTANCE. FAILURE TO PASS ONE OR MORE OF THESE TESTS INDICATES EITHER DAMAGE FROM PREVIOUS TESTING OR POOR WORKMANSHIP.

TABLE 4-2: SHELTER FIRST ARTICLE TEST

TEST DESCRIPTION	SEQ	FOAM & BEAM PARAGRAPH MIL-S-55286D	HONEYCOMB PARAGRAPH NO CP 550100-E	EITHER PARAGRAPH MIL-STD-XXXX
CORE MATERIAL [1]	-	4.6.1	4.2.1.3.2.3	
DENSITY	-	4.6.1.1		
COMPRESSIVE STRENGTH	-	4.6.1.2	4.2.1.3.2.3a(4)	
SHEAR STRENGTH	-	4.6.1.3	4.2.1.3.2.3a(1)	
FIRE RESISTANCE	-			5.3.1
WATER ABSORPTION	-	4.6.1.5	4.2.1.3.2.3a(5)	
DYNAMIC POINT LOAD[2]	-			TBD
ADHESIVE[1]		4.6.2	4.2.1.3.2.2	
SEALER[1]	-	4.6.2	4.2.1.3.2.1	
SHOCK MOUNTS[1,3]	-	4.6.3.1		
HOLD DOWN ASSEMBLY [1,3]	-	4.6.32		
EYE ASSEMBLIES[1,3]	-	4.6.24.2		
PART INTERCHANGEABILITY	-			4.8
SUNSHINE[1]	-			5.2.11
FUNGUS[1]	-			5.3.2
BLOWING SAND[1]	-			5.2.9
WEATHER SEALS[1]	-			5.2.1
CORROSIONS[1]	-			4.15
TOXICITY[1]	-			4.18
IMPACT RESISTANCE[1]	-			5.3.14
INSPECTION[4]	1			4.6,4.9, 4.10, 1-6
ISO REQUIREMENTS	2			5.1.1
PANEL FLATNESS	3			5.3.4
SHELTER SQUARENESS	1			5.3.3
SHELTER WEIGHT	5			4.7
LIFTING AND TOWING EYE STRENGTH	6			5.3.10
PANEL ATTACHMENT POINTS	7			5.3.8
RAIL TRANSPORT	8			5.1.4
AIR TRANSPORTABILITY	9			5.1.2
GROUND MOBILITY	10			5.1.3
FORKLIFT HANDLING	11			5.1.5
ALTITUDE	12			5.2.10
ERECTION AND STRIKING[5]	13			5.1.6
TOW/DRAGGING SIMULATION	14			5.3.11
DROP TESTS	15			5.3.12, 5.3.13
AIR TIGHTNESS [7]	16			5.2.2
INTERNAL WATER TIGHTNESS[2]	17			TBD
WATER TIGHTNESS[3, 7]	18	4.6.30		
TEMPERATURE RANGE	19			5.2.6

TABLE 4-2: SHELTER FIRST ARTICLE TEST (CONT'D)

TEST DESCRIPTION	SEQ	FOAM & BEAM PARAGRAPH MIL-S-55286D	HONEYCOMB PARAGRAPH CP 5500100-E	EITHER PARAGRAPH MIL-STD-XXXX
SOLAR LOAD	20			5.2.12
HEAT TRANSFER	21			5.2.8
MARINE ATMOSPHERE	22			5.2.5
HUMIDITY RESISTANCE	23			5.2.4
SNOW LOADS	24			5.3.5
ROOF LOADS	25			5.3.5
DOOR LOADS	26			5.3.7
FLOOR LOADS	27			5.3.6
DOOR LATCH TORQUE[3]	28	4.6.16		
ROOF ACCESS STEPS	29	4.6.27	3.2.2.10	
LEVELING DEVICES	30			5.3.9
BLACKOUT	31			5.2.3
EMI PROVISIONS[7]	32			5.3.15
ANCHORING [1,4,6]	-			1-2
SPECIAL TOOLS/KITS [1,6]	-			4.9
ICE LOADING [1,6]	-			4.13
WIND VELOCITY [1,6]	-			4.14
LIGHTNING PROTECTION [1,6]	-			4.17
HUMAN ENGINEERING [1,6]	-			4.16
LIGHTING PROVISION[1,6]	-			4.11
INPUT/OUTPUT PANELS AND OPENINGS [1,4,6]	-			3-11
MECHANICAL AND VISUAL[1] INSPECTIONS	-	4.6.4,4.6.5, 4.6.6,4.6.9	4.2.1.1.1	

NOTES:

1) SEQUENCE NOT IMPORTANT
2) NEW TEST TO BE DEVELOPED
3) USE THIS TEST FOR EITHER CONSTRUCTION
4) PARAGRAPH NOS. 1-6, 1-2 AND 3-11 ARE PAGE NUMBERS IN JOCOTAS DRAFT, APRIL 1980
5) EXPANDABLE AND KNOCKDOWN SHELTERS ONLY
6) VALIDATE BY ANALYSIS
7) IN ANY TEST PROFILE, DEVELOPMENT, FIRST ARTICLE, FACILITY PRODUCTION, ETC., EXPERIENCE HAS INDICATED THAT SHELTER OR FACILITY INTEGRITY CAN BE CHECKED BY CONDUCTING EMI, AIRTIGHTNESS, AND WATERTIGHTNESS, IN THIS SEQUENCE, AS THE LAST TESTS BEFORE ACCEPTANCE. FAILURE TO PASS ONE OR MORE OF THESE TESTS INDICATES EITHER DAMAGE FROM PREVIOUS TESTING OR POOR WORKMANSHIP.

TABLE 4-3: SHELTER PRODUCTION TEST

TEST DESCRIPTION	SEQ	FOAM AND BEAM PARAGRAPH MIL-S-55286D	HONEYCOMB PARAGRAPH CP 5500100	EITHER PAPAGRAPH MIL-STD-XXXX
CORE MATERIAL[1]	-	4.6.1	4.2.1.3.2.3	
DENSITY	-	4.6.1.1		
COMPRESSIVE STRENGTH	-	4.6.1.2	4.2.1.3.2.3a(4)	
SHEAR STRENGTH	-	4.6.1.3	4.2.1.3.2.3a(1)	
FIRE RESISTANCE	-			5.3.1
WATER OBSORPTION	-	4.6.1.5	4.2.1.3.2.3a(5)	
DYNAMIC POINT LOAD[2]	-			TBD
ADHESIVE[1]	-	4.6.2	4.2.1.3.2.2	
SEALER[1]	-	4.6.2	4.2.1.3.2.1	
SHOCK MOUNTS[1,6]	-	4.6.3.1		
HOLD DOWN ASSEMBLY[1,3]	-	4.6.32		
EYE ASSEMBLIES[1,3]	-	4.6.24.2		
PART INTERCHANGEABILITY[1]	-			4.8
SUNSHINE [1,7]	-			5.2.11
FUNGUS [1,7]	-			5.3.2
BLOWING SAND [1,7]	-			5.2.9
WEATHER SEALS [1,7]	-			5.2.1
CORROSIONS [1,7]	-			4.15
TOXICITY[1,7]	-			4.18
IMPACT RESISTANCE[1]	-			5.3.14
INSPECTION[4]	1			4.6,4.10 1-6
ISO REQUIREMENTS	2			5.1.1
PANEL FLATNESS	3			5.3.4
SHELTER SQUARENESS	4			5.3.3
SHELTER WEIGHT	5			4.7
LIFTING AND TOWING EYE STRENGTH	6			5.3.10
PANEL ATTACHMENT POINTS	7			5.3.8
ALTITUDE	8			5.2.10
ERECTION AND STRIKING[5]	9			5.1.6
AIR TIGHTNESS [8]	10			5.2.2
INTERNAL WATERTIGHTNESS[2]	11			TBD
WATER TIGHTNESS[3, 8]	12	4.6.30		
MARINE ATMOSPHERE[7]	13			5.2.5
HUMIDITY RESISTANCE[7]	14			5.2.4
SNOW LOADS[7]	15			5.3.5
ROOF LOADS[7]	16			5.3.5
DOOR LOADS[7]	17			5.3.7
FLOOR LOADS[7]	18			5.3.6
DOOR LATCH TORQUE[3]	19	4.6.16		
ROOF ACCESS STEPS	20	4.6.27	3.2.2.10	
LEVELING DEVICES	21			5.3.9
BLACKOUT	22			5.2.3

TABLE 4-3: SHELTER PRODUCTION TEST (CONT'D)

TEST DESCRIPTION	SEQ	FOAM & BEAM PARAGRAPH MIL-S-55286D	HONEYCOMB PARAGRAPH CP550100-E	EITHER PARAGRAPH MIL-STD-XXXX
EMI PROVISIONS[8]	23	4.6.27		5.3.15
INPUT/OUTPUT PANELS AND OPENINGS [1,4,6]	-			3-11
MECHANICAL AND VISUAL[1] INSPECTIONS	-	4.6.4,4.6.5, 4.6.6,4.6.9	4.2.1.1.1	

NOTES:

1) SEQUENCE NOT IMPORTANT
2) NEW TEST TO BE DEVELOPED
3) USE THIS TEST FOR EITHER CONSTRUCTION
4) PARAGRAPH NOS. 1-6, 1-2 AND 3-11 ARE PAGE NUMBERS IN JOCOTAS DRAFT, APRIL 1981
5) EXPANDABLE AND KNOCKDOWN SHELTERS ONLY
6) VALIDATE BY ANALYSIS
7) TEST ONLY FOR THOSE MATERIALS, FINISHES, ETC., CHANGED FROM FIRST ARTICLE
8) IN ANY TEST PROFILE, DEVELOPMENT, FIRST ARTICLE, FACILITY PRODUCTION, ETC., EXPERIENCE HAS INDICATED THAT SHELTER OR FACILITY INTEGRITY CAN BE CHECKED BY CONDUCTING EMI, AIRTIGHTNESS, AND WATERTIGHTNESS, IN THIS SEQUENCE, AS THE LAST TESTS BEFORE ACCEPTANCE. FAILURE TO PASS ONE OR MORE OF THESE TESTS INDICATES EITHER DAMAGE FROM PREVIOUS TESTING OR POOR WORKMANSHIP.

TABLE 4-4: SHELTER FACILITY FIRST ARTICLE TESTS

TEST DESCRIPTION	SEQ	PARAGRAPH NO. MIL-STD-XXXX	COMMENTS
SEALER	-	4.6.2	MIL-S-55286D. REQUIRED ONLY IF SHELTER EXTERNAL SKIN HAS BEEN MODIFIED IN ANY MANNER AND SEALER WAS USED.
DISSIMILAR MATERIALS/ CORROSION	-	TBD	ALL MATERIALS THAT COME IN CONTACT WITH THE SHELTER (E. G. MOUNTING HARDWARE, RACKS, ETC.) SHALL BE TESTED TO THE REQUIREMENTS OF PARAGRAPHS 4.5.1 AND 4.15.
SUSCEPTIBILITY TO INTERNAL ATMOSPHERE	-	TBD	ALL SHELTER MATERIALS SHALL BE TESTED TO DETERMINE THE EFFECTS ON THE MATERIALS OF ANY TOXIC SUBSTANCES THAT WILL BE USED IN THE SHELTER.
ROOF LOADS	-	TBD	VALIDATED BY ANALYSIS. IF ANTENNAE ARE MOUNTED ON ROOF, OR IF PERSONNEL ARE REQUIRED ON ROOF FOR ERECTION AND STRIKING. WORST CASE NUMBER OF PERSONNEL REQUIRED AND WEIGHT OF TOOLS AND EQUIPMENT SHOULD BE CONSIDERED. IF ANTENNAE ARE MOUNTED, FORCES EXERTED BY MAXIMUM WIND CONDITIONS SHOULD BE CONSIDERED.
ANCHORING	-	1-2	JOCOTAS DRAFT PAGE NO. VALIDATE BY ANALYSIS IF LARGE ANTENNAE MOUNTED ON ROOF.
EQUIPMENT LOADS	-	TBD	VALIDATE BY ANALYSIS. THE WEIGHTS OF EACH EQUIPMENT INCLUDING RACKS AND MOUNTING HARDWARE ARE TO BE MEASURED AND THE CENTER OF GRAVITY (CG) CALCULATED.

TABLE 4-4: SHELTER FACILITY FIRST ARTICLE TESTS (CONT'D)

TEST DESCRIPTION	SEQ	PARAGRAPH NO. MIL-STD-XXXX	COMMENTS
VISUAL AND MECHANICAL	1	TBD	QUALITY INSPECTION OF PAINT AND WORKMANSHIP OF MODIFICATIONS MADE TO SHELTER.
SHELTER WEIGHT	2	TBD	THE TOTAL WEIGHT OF THE SHELTER WITH EQUIPMENT IS TO BE MEASURED AND THE CENTER OF GRAVITY (CG) CALCULATED.
LIFTING AND TOWING EYE STRENGTH	3	5.3.10	REQUIRED ONLY IF SPECIFIED TEST WEIGHT EXCEEDED.
PANEL ATTACHMENT POINTS	4	5.3.8	REQUIRED ONLY FOR ANY ATTACHMENT POINTS ADDED.
RAIL TRANSPORTABILITY [1]	5	5.1.4	INSTRUMENTED.
AIR TRANSPORTABILITY [1]	6	5.1.2	INSTRUMENTED.
GROUND MOBILITY [1] TRUCK BED MOBILIZER TRAILER	7	5.1.3	INSTRUMENTED. THE SHELTER SHOULD BE MOUNTED ON THE TRUCK USE MOBILIZING METHOD, IF KNOWN.
FORKLIFT HANDLING [1]	8	5.1.5	INSTRUMENTED.
ERECTION AND STRIKING	9	5.1.6	EXPANDABLES AND KNOCKDOWNS ONLY.
TOWING AND DRAGGING	10	5.3.11	
DROP SHOCK [1] WITHOUT SKIDS WITH SKIDS	11	 5.3.12 5.3.13	SELECT APPROPRIATE TESTS. INSTRUMENTED. INSTRUMENTED.
INTERNAL WATERTIGHTNESS	12	TBD	REQUIRED ONLY IF LIQUIDS WILL BE STORED OR USED IN THE SHELTER.
WATER TIGHTNESS [2]	13	TBD	EXTERNAL VISUAL FOR POSSIBLE ICE COLLECTION POINTS. INTERNAL VISUAL FOR LEAKAGE.

TABLE 4-4: SHELTER FACILITY FIRST ARTICLE TESTS (CONT'D)

TEST DESCRIPTION	SEQ	PARAGRAPH NO. MIL-STD-XXXX	COMMENTS
DOOR LOADS	14	5.3.7	REQUIRED ONLY IF DOOR OR DOOR FRAME MODIFIED.
LEVELING DEVICES	15	5.3.9	REQUIRED ONLY IF SPECIFIED WEIGHT EXCEEDED AND/OR LEVELING DEVICES WERE ADDED BY THE SYSTEM INTEGRATOR.
BLACKOUT	16	5.2.3	
EMI PROVISIONS[2]	17	5.3.15	
RELIABILITY TEST	18	TBD	VALIDATE BY ANALYSIS USING FINITE ELEMENT (FE) PROGRAM, USING WEIGHTS AND CG RECORDED AND ANTICIPATED USE CONDITIONS GIVEN IN OPERATIONAL MODE SUMMARIES.

NOTES:

1) IT IS RECOMMENDED THAT DATA FROM INSTRUMENTATION BE USED TO VALIDATE RELIABILITY TEST.
2) IN ANY TEST PROFILE, DEVELOPMENT, FIRST ARTICLE, FACILITY PRODUCTION, ETC., EXPERIENCE HAS INDICATED THAT SHELTER OR FACILITY INTEGRITY CAN BE CHECKED BY CONDUCTING EMI, AIRTIGHTNESS, AND WATERTIGHTNESS, IN THIS SEQUENCE, AS THE LAST TESTS BEFORE ACCEPTANCE. FAILURE TO PASS ONE OR MORE OF THESE TESTS INDICATES EITHER DAMAGE FROM PREVIOUS TESTING OR POOR WORKMANSHIP.

TABLE 4-5: SHELTER FACILITY PRODUCTION TESTS

TEST DESCRIPTION	SEQ	PARAGRAPH NO. MIL-STD-XXXX	COMMENTS
SEALER	-	4.6.2	MIL-S-55286D. REQUIRED ONLY IF SHELTER EXTERNAL SKIN HAS BEEN MODIFIED IN ANY MANNER AND SEALER WAS USED.
DISSIMILAR MATERIALS/ CORROSION[1]	-	TBD	ALL MATERIALS THAT COME IN CONTACT WITH THE SHELTER (E. G. MOUNTING HARDWARE, RACKS, ETC.) SHALL BE TESTED TO THE REQUIREMENTS OF PARAGRAPHS 4.5.1 AND 4.15.
SUSCEPTIBILITY TO INTERNAL ATMOSPHERE[1]	-	TBD	ALL SHELTER MATERIALS SHALL BE TESTED TO DETERMINE THE EFFECTS ON THE MATERIALS OF ANY TOXIC SUBSTANCES THAT WILL BE USED IN THE SHELTER.
ROOF LOADS[2]	-	5.3.5	VALIDATED BY ANALYSIS. IF ANTENNAE ARE MOUNTED ON ROOF, OR IF PERSONNEL ARE REQUIRED ON ROOF FOR ERECTION AND STRIKING. WORST CASE NUMBER OF PERSONNEL REQUIRED AND WEIGHT OF TOOLS AND EQUIPMENT SHOULD BE CONSIDERED. IF ANTENNAE ARE MOUNTED, FORCES EXERTED BY MAXIMUM WIND CONDITIONS SHOULD BE CONSIDERED.
ANCHORING [2]	-	1-2	JOCOTAS DRAFT PAGE NO. VALIDATE BY ANALYSIS IF LARGE ANTENNAE MOUNTED ON ROOF.
EQUIPMENT LOADS[2]	-	TBD	VALIDATE BY ANALYSIS. THE WEIGHTS OF EACH EQUIPMENT INCLUDING RACKS AND MOUNTING HARDWARE ARE TO BE MEASURED AND THE CENTER OF GRAVITY (CG) CALCULATED.

TABLE 4-5: SHELTER FACILITY PRODUCTION TESTS (CONT'D)

TEST DESCRIPTION	SEQ	PARAGRAPH NO. MIL-STD-XXXX	COMMENTS
VISUAL AND MECHANICAL	1	TBD	QUALITY INSPECTION OF PAINT AND WORKMANSHIP OF MODIFICATIONS MADE TO SHELTER.
SHELTER WEIGHT [2]	2	TBD	THE TOTAL WEIGHT OF THE SHELTER WITH EQUIPMENT IS TO BE MEASURED AND THE CENTER OF GRAVITY (CG) CALCULATED.
LIFTING AND TOWING EYE STRENGTH [2]	3	5.3.10	REQUIRED ONLY IF SPECIFIED TEST WEIGHT EXCEEDED.
PANEL ATTACHMENT POINTS [2]	4	5.3.8	REQUIRED ONLY FOR ANY ATTACHMENT POINTS ADDED.
RAIL TRANSPORTABILITY [2]	5	5.1.4	INSTRUMENTED.
AIR TRANSPORTABILITY [2]	6	5.1.2	INSTRUMENTED.
GROUND MOBILITY [2] TRUCK BED MOBILIZER TRAILER	7	5.1.3	INSTRUMENTED. THE SHELTER SHOULD BE MOUNTED ON THE END USE MOBILIZING METHOD, IF KNOWN. IF UNKNOWN OR MORE THAN ONE MAY BE USED, MOUNT ON MOBILIZER.
FORKLIFT HANDLING [2]	8	5.1.5	INSTRUMENTED.
ERECTION AND STRIKING	9	5.1.6	EXPANDABLES AND KNOCKDOWNS ONLY.
TOWING AND DRAGGING [2]	10	5.3.11	
DROP SHOCK [2] WITHOUT SKIDS WITH SKIDS	11	 5.3.12 5.3.13	SELECT APPROPRIATE TESTS. INSTRUMENTED. INSTRUMENTED.
INTERNAL WATERTIGHTNESS [3]	12	TBD	REQUIRED ONLY IF LIQUIDS WILL BE STORED OR USED IN THE SHELTER.
WATERTIGHTNESS [3, 4]	13	TBD	EXTERNAL VISUAL FOR POSSIBLE ICE COLLECTION POINTS. INTERNAL VISUAL FOR LEAKAGE.

TABLE 4-5: SHELTER FACILITY PRODUCTION TESTS (CONT'D)

TEST DESCRIPTION	SEQ	PARAGRAPH NO. MIL-STD-XXXX	COMMENTS
DOOR LOADS [2]	14	5.3.7	REQUIRED ONLY IF DOOR OR DOOR FRAME MODIFIED.
LEVELING DEVICES [3]	15	5.3.9	REQUIRED ONLY IF SPECIFIED WEIGHT EXCEEDED AND/OR LEVELING DEVICES WERE ADDED BY THE SYSTEM INTEGRATOR.
BLACKOUT [3]	16	5.2.3	
EMI PROVISIONS [3, 4]	17	5.3.15	
RELIABILITY TEST [2]	18	TBD	VALIDATE BY ANALYSIS USING FINITE ELEMENT (FE) PROGRAM, USING WEIGHTS AND CG RECORDED AND ANTICIPATED USE CONDITIONS GIVEN IN OPERATIONAL MODE SUMMARIES.

NOTES:

1) TEST ONLY FOR THOSE MATERIALS, FINISHES, ETC., CHANGED FROM FIRST ARTICLE.
2) TEST ONLY IF DESIGN MODIFICATIONS MADE
3) STATISTICAL SAMPLE SIZE REQUIRED.
4) IN ANY TEST PROFILE, DEVELOPMENT, FIRST ARTICLE, FACILITY PRODUCTION, ETC., EXPERIENCE HAS INDICATED THAT SHELTER OR FACILITY INTEGRITY CAN BE CHECKED BY CONDUCTING EMI, AIRTIGHTNESS, AND WATERTIGHTNESS, IN THIS SEQUENCE, AS THE LAST TESTS BEFORE ACCEPTANCE. FAILURE TO PASS ONE OR MORE OF THESE TESTS INDICATES EITHER DAMAGE FROM PREVIOUS TESTING OR POOR WORKMANSHIP.

environment cannot be adequately tested until it becomes a facility. However, based on the assumptions made about future shelter and shelter facility procurement, these five profiles are necessary to place responsiblity for test deficiencies.

The Shelter Development Test profile is performed on all new shelter types. The test procedures and test parameters (e.g. maximum weight, EMI frequencies) may have to be changed to reflect the procurement specifications.

The Shelter First Article Test profile is performed on the first production model for all new shelter procurements. This profile may be omitted if the development and production phases are contracted to the same manufacturer.

The Shelter Production Test profile is performed on each production lot. The test sample size should be called out in the applicable specification. The non-expandable ISO and knockdown ISO shelter types should use the test sample size called out in MIL-S-81030D (AS) for the equivalent test.

The Shelter Facility First Article Test profile is performed on the first production model for all new facilities where a facility is defined as the shelter and the associated electronic, medical, photographic, food processing, etc. equipment.

The Shelter Facility Production Test profile is performed on each production lot. The test sample size should be called out in the system (facility) procurement package. The test sample size called out in the applicable shelter specification may be used. For facilities using non-expandable ISO or knockdown ISO shelter types the test sample size called out in MIL-S-81030D (AS) for the equivalent test should be used.

The test profiles are based on an analysis of test results, operational mode summaries and a review of the test requirements and methods currently imposed on shelters. The profiles make maximum use of the requirements and methods currently being imposed. Additions, deletions and changes were only made when the current tests were not deemed to be adequate or necessary. The profiles list the test paragraph and appliable test specification/standard. All of the conditions, sample sizes and requirements called out by the referenced paragraph apply unless specifically noted. The term "TBD" indicates that this is a new test that is recommended for future procurements. A brief description of the new tests and the rationale for recommending them are discussed in Section 5.0, Conclusions and Recommendations.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This report outlines a five part test program for eight members of the standard family of rigid wall tactical shelters. The original intent was to define a test profile for each distinct equipment/system function (e.g. Radio Communications, Photo processing, etc.) because it was recognized that, while new equipments/systems procured will differ in design and technology, the function will remain relatively constant, and that a test profile could be developed which would minimize future test costs and yet adequately test the shelter. The change in procurement philosophy to one where shelters would be purchased in large quantities, stored in a central location and supplied as Government Furnished Equipment necessarily altered the test profile development. Tests could no longer be structured to simulate expected use conditions based on the historical operational use of a system/equipment function because it would be impossible to determine how the shelter would be used. Therefore a five part test program was developed. This program specifies a series of tests that will adequately test the shelter regardless of the intended use, and a series of tests that will adequately test the facility when the end use is known. This method of testing is not the most economical method because tests are duplicated. The most economical test procedure would eliminate most of the shelter First Article operational and environmental tests, however, because of the procurement method, these tests are necessary to place responsibility for shelter failures. These unnecessary tests could be eliminated if shelter vendors were qualified similar to other vendors of materials produced to MIL specifications and a government sponsored certification plan instituted. The elimination of the First Article tests is a technical evaluation only, and it is recognized that the elimination of these tests may have contractual implications.

Several new tests are recommended. These tests were deemed necessary to adequately test the shelter. The tests and the rationale for implementing them are discussed in the following paragraphs.

The Internal Watertightness test was recognized as being necessary for all "wet" type shelters (e.g. medical, food processing, photo processing) where liquids are routinely used. This test should be designed to insure that liquids will not penetrate the panels and cause delaminations and internal corrosion. The test is recommended because of the large incidence of internal delaminations in photo processing shelters.

A Dynamic Point Load test was recognized as being necessary for all floor panels, and all roof panels on expandable shelters and shelters with antennae mounted on the roof. This test should be designed to duplicate the repeated occurrence of a serviceman walking on the panel. The test is recommended because of the number of personnel observed on the roofs on the shelters, and the high incidence of delaminations on the roof and on the floor panel directly inside the door.

The Visual and Mechanical test called out in the Shelter Facility tests needs to be implemented. The test should include quality inspection of the paint and any modifications made to the shelter. A test similar to MIL-S-81030D (AS) paragraph 4.6 needs to be developed.

A Dissimilar Materials and a Susceptibility to Internal Atmosphere requirement in accordance with MIL-F-14072 should be specified to insure that the shelter will not corrode because of additions made by the system integrator.

The Equipment Load and Shelter Weight tests called out in the Shelter Facility tests are required to provide inputs for the Reliability Test as well as to insure that the maximum weight and maximum floor loads are not being exceeded, and the shelter maintains an acceptable center of gravity.

The use of the Finite Element Method discussed in Section 3.5 as the basis for an analytical shelter reliability test method is one of the most important and promising findings of this study. References 3,4, and 5 confirm this view. These references do not, by themselves, represent the needed method but do contain a number of the important model algorithms required. These include models which reconfigure the structure to reflect the effect of load, account for the accumulation of damage, changes in structural stiffness, material hardening/softening, and creep stress relaxation. Other models for wear, seal degradation, skin-core separation, and corrosion would require development or refinement. In the development of these later models it will be essential that the failure mechanisms and the casual stress are properly understood and accounted for. Consider the case of skin-core separation which may be caused by transportation/mobility induced shear loads, solar radiation shear loads induced by large differences in coefficients of expansion, and chemical reactions caused by heat and the presence of moisture. Thus, a proper model must consider not only application stresses but also environmental stresses.

It would also be desirable to incorporate a Monte Carlo program to simulate the variabilities of characteristics resulting from the materials processes, and fabrications methods that would be present in a production lot.

This method of analytically testing for reliability has the promise of being cost effective since no hardware is required, the sample size is not restricted, and random samples of the population can be represented. Engineering changes required can be incorported into the design prior to any fabrication, types and frequency of maintenance will be apparent, and finally the test time becomes small compared to hardware testing.

The shelters should be redesigned to withstand a top lift without spreader bars using a 5-ton wrecker. Although this method of pickup is not according to specification, it is done quite frequently in the field because this is the only method the units possess. The survey showed that 53.8% of all units surveyed (39.6% of the shelters) use the 5-ton wrecker to load/off load shelters. Since it is doubtful that the Air Force will supply each unit with a 5-ton forklift or a 5-ton crane, this method of off-load/load will continue, and the shelter should be tested to determine if it can withstand the stresses imposed by the decreased sling angle. It should also be noted here that it could not be determined that this method of pickup caused any damage to the shelter.

The fording test was omitted from the test profiles because the survey showed that Air Force tactical shelters are not forded. This does not mean that given the right war time conditions, they would not be forded; however, if the current field exercises approximate war time conditions, then the probability of a ford occurring is relatively low.

The comments recorded during the survey were of insufficient quantity to conduct a quantitative correlation analysis; therefore, a qualitative evaluation was conducted. The analysis of the impact of the operational parameters could have been quantified if the repair information were reported to the Air Force Logistics Command Maintenance Data System. Had maintenance data been reported to this system, it could have been analyzed with the operational parameter data collected during the survey and a correlation analysis conducted to determine those parameters that have a significant impact on maintenance activities.

There is not enough actual test data to quantitatively determine if all of the tests called out in the test program are necessary to verify the shelter design and/or manufacturing workmanship. The instrumentation of the tests that were recommended to verify the results of the Finite Element (FE) program may provide sufficient data so that a quantitative analysis can be made. The results of FE programs themselves may also provide the data necessary to make these determinations. A study to quantitatively assess the impact of the tests on the shelter should be initiated when sufficient data becomes available.

The Anchoring and Wind Velocity requirements called out in MIL-STD-XXXX may have to be raised to meet expected wind velocities over the life of the shelter. They were not changed in this report because there was no indication given in either the literature or the comments that this was a problem area.

The Ground Transportability Test is a good facility level vibration test that gives reasonable assurance that the facility will meet the vibration stresses associated with ground mobility. No data were obtained to validate whether the length of the course is adequate; however, the average upper limit for the number of miles deployed over unpaved roads during a 15 year life was determined by the survey to be greater than 4,000 miles, and the survey did not disclose any problem areas that could be attributed directly to vibration stress fatigue. Therefore, the approximately 500 test miles currently being applied appears to be adequate.

REFERENCES

1. Natrella, Mary Gibbons, Experimental Statistics, National Bureau of Standards Handbook 91, August 1963.

2. Siegel, S., Non-parametric Statistics for the Behaviorial Sciences.

3. Winter, R., Pifko, A.B. and Cronkhite, J.D., "Crash Simulation of Composite and Aluminum Helicopter Fuselages Using a Finite Element Program," Journal of Aircraft, Vol. 17, No. 8, Article No. 79-0781R, August, 1980.

4. Carroll, J.R., Brugh, R.L. and Wilkinson, R.W., "Investigation of Stress-Strain History Modeling at Stress Risers, Phase II," Lockhead-Georgia Company, Final Report AFFDL-TR-78-167, Contract No. F33615-75-C-3078, December, 1978.

5. Calligeros, J.M., Walsh, J.P. and Yeghiayan, R.P., "Structural Modeling and Response of Command, Control and Communication Shelter Systems for Event DICE THROW," Kaman AviDyne, Final Report ARBRL-CR-00421, contract No. DAAD05-74-C-0744, March 1980.

6. Johnson, Arthur R. and Ciras, Vitty P., "Finite Element Analysis of a Statically Loaded ISO Tactical Shelter", U.S. Army Natick Research and Development Command, Project No. 62723A, IL 162723A427 01003BG, January 1979.

7. Can, H.Y., Chang, K.T., Wojnarowski, M.E., "Comparison of Stresses Calculated Using DAISY System to those measured on the SL-7 Containership Program," American Bureau of Shipping, Final Report No. SSC-282-(SL-7-24), Contract No. DOT-CG-63176A, January, 1979.

8. Holt, P.J. and Webber J.P.H., "Finite Elements for Honeycomb Sandwich Plates and Sheets," Paper No. 745, Aeronamtical Journal, March/April 1980.

9. Nicholson, David J., "Constitutive Model for Rapidly Damaged Structural Materials," Naval Surface Weapons Center, Final Report NSWC-TR-80-249, July, 1980.

10. Jenkayya, V.B., Khot, N.S. and Easter, F.E., "Vulnerability Analysis of Optimized Structures," AIAA Journal, Vol 16, No. 11, November 1978.

11. Dunder, V., Ridlon, S., "Practical Applications of Finite Element Method," ASCE Journal of the Structural Division, Vol 104, No. ST1 January 1978.

12. Sheffler, A., "An Overview of Finite Element Methods and Their Application to Engineering Problems," RCA Review, Vol. 39, December, 1978.

13. Krouse, J.K., "Finite Element Update," Machine Design," Vol 50, pages 98-103, January 1978.

14. Hudson, David H., "Stress Analyzing Complex Parts," Machine Design, Vol 51, pages 103-107, November 8, 1979.

15. Krouse, J.K., "Stress Analysis On a Budget," Machine Design, Vol 51, pages 66-71, March 8, 1979.

16. Barca, F.F., "Experimental Measurement of Strain and Acceleration Levels In a Rigid Wall Shelter Subjected to Environmental Harding," U.S. Army Natick Research and Development Command, NATICK TR-79-024, December 19.

17. Specification No. MIL-S-55541D(EL), "Shelter, Electrical Equipment S-250 () /G, dated February 18, 1977.

18. Specification No. CP 550100-E, "Shelter, Electrical Equipment," dated April 19,1974.

19. Specification No. MIL-S-55286C(EL), "Shelter, Air Transportable, Aircraft Support," dated March 12, 1974.

20. Specification No. MIL-S-80130D(AS), "Shelter, Air Transportable, Aircraft Support," dated March 12, 1974.

21. Attachment 1 No. Des X-1-77, "Shelter, Tactical, Expandable, One-Side," dated April 29, 1977.

22. Specification No. 9219-001, "Shelter, Rigid," dated September 18, 1973.

23. Specification No. 9219-002, "Shelter, Knockdown," dated September 18, 1973.

24. Specification 9219-003, "Prime Item Product Fabrication Specification, 10 foot and 20 foot EMI.

25. "DOD Tactical Shelter Parameters," JOCOTAS Technical Working Group, dated April 23, 1980.

26. MIL-STD-XXXX, "Military Standard Engineering And Design Criteria For Rigid Wall Tactical Shelters", dated 31 March 1981.

27. MIL-STD-210B, "Military Standard Climatic Extremes For Military Equipment", dated 15 December 1973.

28. Hamilton, J.W., Cohen, S., "Decision Path Approach To Guidance For Climatic Environmental Test Planning (MIL-STD-810C)," U.S. Army Engineer Topographic Laboratories, Report No. ETL-0183, April 1979.

29. Anonymous, "Railroad Hump Test General Dynamics CPI Shelter", Hughes Aircraft Company Ground Systems Group, 9 January 1976.

30. Anonymous, "Shelter Ground Transportability Stress Recordings".

31. Fulton, D.W., "Reliability/Maintainability Study For Tactical Ground Electronic Shelters," Rome Air Development Center, Report No. RADC-TR-80-235, July 1980.

Appendix A

OPERATIONAL MODE SUMMARIES

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE COMSEC

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER* LIMIT	POINT ESTIMATE	UPPER* LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	< 0.1	0	< 1.5
NO. OF TIMES SETUP AT HOME STATION	8	17.5	120	262.5
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	3	0	45
NO. OF TIMES SET UP ON JACKS	0	14	0	210
NO. OF DAYS OPERATED AT HOME STATION	200	365	3000	5475
NO. OF HOURS OPERATED AT HOME STATION	800	8760	12000	131400
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1372	2000	20580	30000
NO. OF TIMES DEPLOYED	5	6	75	90
NO. OF DAYS DEPLOYED	105	126	1575	1890
NO. OF MILES DEPLOYED OVER PAVED ROADS	2000	2597	30000	38955
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	250	300	3750	4500
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	2	3	30	45
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	2520	3024	37800	45360
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1050	2205	15750	33075

*THE UPPER 90% SINGLE SIDED CONFIDENCE LIMIT OF THE POPULATION

**ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
FLORIDA	FALL		
SOUTH CAROLINA	SPRING		
NEW MEXICO	SPRING		
TEXAS	SUMMER		
PHILIPPINES	NOT RECORDED		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L — WRECKER X

NO. OF PERSONNEL ON ROOF:(MEDIAN)

NOMINAL 3 UPPER 4 — MAXIMUM 3 UPPER 4

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE DSTE

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	4	-	60	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	-	60	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	32	-	480	-
NO. OF HOURS OPERATED AT HOME STATION	256	-	3840	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	480	-	7200	-
NO. OF TIMES DEPLOYED	2	-	30	-
NO. OF DAYS DEPLOYED	30	-	450	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	140	-	2100	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	30	-	450	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	720	-	10800	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	450	-	6750	-

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
WASHINGTON	SUMMER/WINTER		
NEW MEXICO	WINTER		
KOREA	WINTER		
ALASKA	WINTER		
IDAHO	SUMMER		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER _____

TIEDOWN METHOD(S):

CHAIN _____ — WEB SLING _____

CABLE _____ — BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ — FORKLIFT _____

407L _____ — WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 0 UPPER - — MAXIMUM 0 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE ES/FS

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	.1	.4	1.5	6
NO. OF TIMES SETUP AT HOME STATION	1.3	4	19.5	60
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	2	15	30
NO. OF TIMES SETUP ON JACKS	1.6	4.5	24	67.5
NO. OF DAYS OPERATED AT HOME STATION	260	365	3900	5475
NO. OF HOURS OPERATED AT HOME STATION	3120	5616	46800	84240
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1095	40150	16425	602250
NO. OF TIMES DEPLOYED	0.5	2	7.5	30
NO. OF DAYS DEPLOYED	2.5	28	37.5	420
NO. OF MILES DEPLOYED OVER PAVED ROADS	2.2	6	33	90
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	0	0	0
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	60	672	900	10080
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	0	110	0	1650

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
BERGSTROM AFB	ALL		
ALCONBURY, ENGLAND	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN — WEB SLING

CABLE X — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER

NO. OF PERSONNEL ON ROOF:

NOMINAL 1 (3) — MAXIMUM 3 (3)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

QUIPMENT TYPE ES-57,58,59,73,65

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	.12	.18(99)	1.8	2.7 (99)
NO. OF TIMES SETUP AT HOME STATION	1.6	4	24	60
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1.6	2	24	30
NO. OF TIMES SETUP ON JACKS	1.6	4.5	24	67.5
NO. OF DAYS OPERATED AT HOME STATION	260	365	3900	5475
NO. OF HOURS OPERATED AT HOME STATION	3120	5616	46800	84240
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2760	29200	41400	438000
NO. OF TIMES DEPLOYED	0.5	2	7.5	30
NO. OF DAYS DEPLOYED	2.5	28	37.5	420
NO. OF MILES DEPLOYED OVER PAVED ROADS	1.5	12	22.5	180
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	0	0	0
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	60	672	900	10080
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	75	800	1125	12000

** ASSUME 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
BERGSTROM AFB	ALL		
ALCONBURY, ENGLAND	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN — WEB SLING

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER

NO. OF PERSONNEL ON ROOF:(MEDIAN)

NOMINAL 1 UPPER 3 — MAXIMUM 2 UPPER 3

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE ES-60,61,63,64,72

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	.11	.4(97)	1.65	6 (96)
NO. OF TIMES SETUP AT HOME STATION	1.6	4(99)	24	60 (99)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	1.6(99)	15	24 (99)
NO. OF TIMES SETUP ON JACKS	2	4.5(99)	30	67.5(99)
NO. OF DAYS OPERATED AT HOME STATION	321	365 (99)	4815	5475 (99)
NO. OF HOURS OPERATED AT HOME STATION	4830	5778 (99)	72450	86670 (99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	17680	5810 (99)	265200	871515 (99)
NO. OF TIMES DEPLOYED	0.5	2 (99)	7.5	30 (99)
NO. OF DAYS DEPLOYED	0.8	10 (99)	12	150 (99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1.5	32 (99)	22.5	480 (99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	0(99)	0	0 (99)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	19.2	240 (99)	288	3600 (99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	0	1100 (99)	0	16500 (99)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
BERGSTROM AFB	ALL		
ALCONBURY, ENGLAND	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN — WEB SLING

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 — UPPER 3 (99) — MAXIMUM 2 — UPPER 3 (99)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE FS-6

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	.1	.25(95)	1.5	3.75 (95)
NO. OF TIMES SETUP AT HOME STATION	0	2 (99)	0	30 (99)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	2 (99)	15	30 (99)
NO. OF TIMES SETUP ON JACKS	1.5	45 (99)	22.5	67.5 (99)
NO. OF DAYS OPERATED AT HOME STATION	312	365 (99)	4680	5475 (99)
NO. OF HOURS OPERATED AT HOME STATION	4760	8760 (99)	71400	131400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	624	4745 (99)	9360	71175 (99)
NO. OF TIMES DEPLOYED	0.5	2 (99)	7.5	30 (99)
NO. OF DAYS DEPLOYED	2.5	28 (99)	37.5	420 (99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1.5	12 (99)	22.5	180 (99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	0	0	0
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	60	672 (99)	900	10080 (99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	0	168 (99)	0	2520 (99)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
BERGSTROM AFB	ALL		
ALCONBURY, ENGLAND	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN — WEB SLING

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 3 (99) — MAXIMUM 2 UPPER 3 (99)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD

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LEAST COST TEST PROFILE. VOLUME I.(U)
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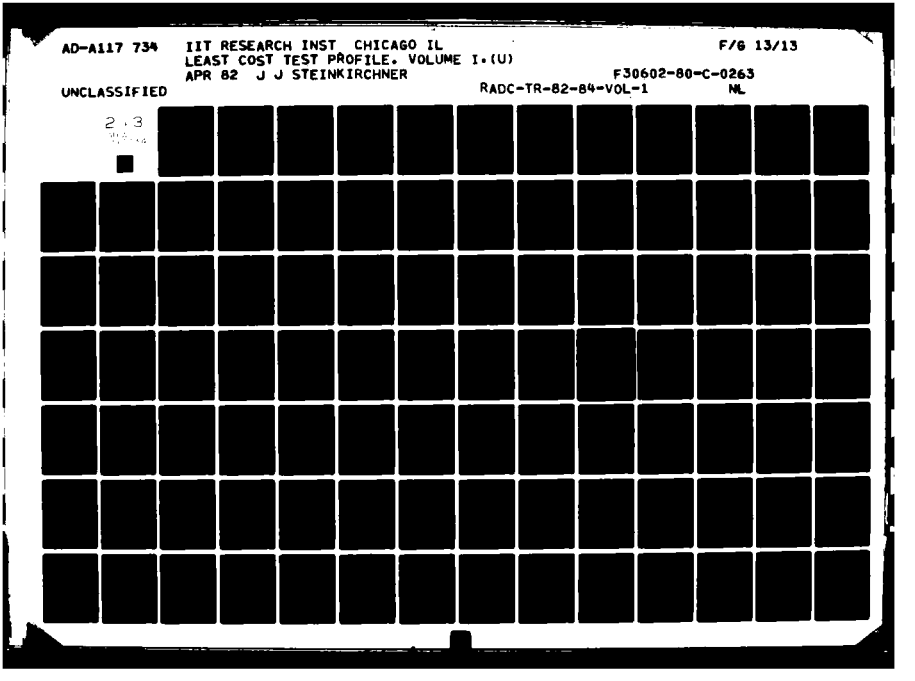

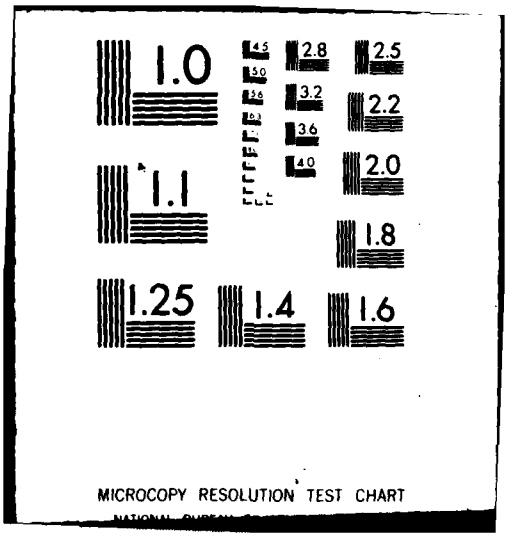
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MICROCOPY RESOLUTION TEST CHART

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE FS-7

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	.16	.5(56)	2.4	7.5 (56)
NO. OF TIMES SETUP AT HOME STATION	1	4	15	60 (84)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	2 (70)	15	30 (70)
NO. OF TIMES SETUP ON JACKS	1.5	4.5(84)	22.5	67.5 (84)
NO. OF DAYS OPERATED AT HOME STATION	290.5	365 (84)	4357.5	5475 (84)
NO. OF HOURS OPERATED AT HOME STATION	3975	5778 (84)	59625	86670 (84)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	642	67525 (84)	9630	1012875 (84)
NO. OF TIMES DEPLOYED	1	5 (84)	15	75 (84)
NO. OF DAYS DEPLOYED	10	28 (84)	150	420 (84)
NO. OF MILES DEPLOYED OVER PAVED ROADS	8	15 (84)	120	225 (84)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	0	0	0
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	240	672 (84)	3600	10080 (84)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	0	3000 (84)	0	45000 (84)

**ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
BERGSTROM AFB	ALL		
ALCONBURY, ENGLAND	ALL		

MOBILIZING METHOD(S):

TRUCK X MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT X

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 3 (84) MAXIMUM 2 UPPER 3 (84)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE MDC

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3 *
NO. OF TIMES SETUP AT HOME STATION	4.5	-	67.5	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	-	60	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	4.5	-	67.5	-
NO. OF HOURS OPERATED AT HOME STATION	45	-	675	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	180	-	2700	-
NO. OF TIMES DEPLOYED	4	-	60	-
NO. OF DAYS DEPLOYED	44	-	660	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	1000	-	15000	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	108		1620	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	1	-	15	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-		-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1056	-	15840	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1760	-	26400	-

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CALIFORNIA	ALL		
WORLDWIDE	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER

TIEDOWN METHOD(S):

CHAIN — WEB SLING X

CABLE — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER X

NO. OF PERSONNEL ON ROOF:(MEDIAN)

NOMINAL 1 UPPER - — MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE MDE

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	1	-	15	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	-	0	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	12	-	180	-
NO. OF HOURS OPERATED AT HOME STATION	94	-	1410	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	60	-	900	-
NO. OF TIMES DEPLOYED	3	-	45	-
NO. OF DAYS DEPLOYED	90	-	1350	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	90	-	1350	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	-	0	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	.38	-	5.7	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	2160	-	32400	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	450	-	6750	-

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
FLORIDA	FALL		
NORTH CAROLINA	SPRING		
ILLINOIS	SUMMER/SPRING		
KOREA	FALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER _____

TIEDOWN METHOD(S):

CHAIN _____ — WEB SLING _____

CABLE _____ — BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ — FORKLIFT _____

407L _____ — WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER - — MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE N.C.M.O.

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	1	-	15	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	-	0	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	0	-	0	-
NO. OF HOURS OPERATED AT HOME STATION	0	-	0	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	0	-	0	-
NO. OF TIMES DEPLOYED	3	-	45	-
NO. OF DAYS DEPLOYED	90	-	1350	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	90	-	1350	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	-	0	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0.3	-	4.5	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	- -
NO. OF HOURS OPERATED ON DEPLOYMENT **	2160	-	32400	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	0	-	0	-

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
FLORIDA	FALL		
NORTH CAROLINA	SPRING		
ILLINOIS	SUMMER/SPRING		
KOREA	FALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER _____

TIEDOWN METHOD(S):

CHAIN _____ — WEB SLING _____

CABLE _____ — BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ — FORKLIFT _____

407L _____ — WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER - — MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE TTY/CRYPTO

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	-	3*
NO. OF TIMES SETUP AT HOME STATION	4.5	-	67.5	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	-	60	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	2	-	30	-
NO. OF HOURS OPERATED AT HOME STATION	20	-	300	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	80	-	1200	-
NO. OF TIMES DEPLOYED	2	-	30	-
NO. OF DAYS DEPLOYED	22	-	330	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	1000	-	15000	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	108	-	1620	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	528	-	7920	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	880	-	13200	-

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CALIFORNIA	ALL		
WORLDWIDE	ALL		

MOBILIZING METHOD(S):

TRUCK X MOBILIZER

TIEDOWN METHOD(S):

CHAIN WEB SLING X

CABLE BOLTED

LOAD/UNLOAD METHOD(S):

CRANE FORKLIFT

407L WRECKER

NO. OF PERSONNEL ON ROOF:(MEDIAN)

NOMINAL 1 UPPER - MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE UCP/JOBC

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	12	-	180	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	-	60	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	150	-	2250	-
NO. OF HOURS OPERATED AT HOME STATION	2400	-	36000	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	15000	-	225000	-
NO. OF TIMES DEPLOYED	10	-	150	-
NO. OF DAYS DEPLOYED	0	-	0	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	6000	-	90000	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	80	-	1200	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	0	-	0	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	0	-	0	-

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
ALASKA	WINTER		
KOREA	SPRING		
MOJAVE DESERT	SUMMER		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER _____

TIEDOWN METHOD(S):

CHAIN _____ — WEB SLING _____

CABLE X — BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ — FORKLIFT _____

407L _____ — WRECKER X

NO. OF PERSONNEL ON ROOF:(MEDIAN)

NOMINAL 2 UPPER - — MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE V-83

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	2.5	2.5(87)	37.5	37.5 (87)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0.5	1.5(87)	7.5	22.5 (87)
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	24	24 (87)	360	360 (87)
NO. OF HOURS OPERATED AT HOME STATION	192	192 (87)	2880	2880 (87)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	240	450 (87)	3600	6750 (87)
NO. OF TIMES DEPLOYED	2.5	2.5(87)	37.5	37.5 (87)
NO. OF DAYS DEPLOYED	12.8	12.8(26)	191.2	192 (26)
NO. OF MILES DEPLOYED OVER PAVED ROADS	765	765 (26)	11475	11475 (26)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	33	33 (26)	495	495 (26)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	307	307 (26)	4608	4608 (26)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	320	320 (26)	4800	4800 (26)

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CONUS	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER

TIEDOWN METHOD(S):

CHAIN — WEB SLING

CABLE — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT

407L — WRECKER

NO. OF PERSONNEL ON ROOF:(MEDIAN)

NOMINAL 2 UPPER - — MAXIMUM 2 UPPER 2 (87)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TCC

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	1(90)	0	15 (90)
NO. OF TIMES SETUP AT HOME STATION	2	5(90)	30	75 (90)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	4(90)	30	60 (90)
NO. OF TIMES SETUP ON JACKS	2	4(90)	30	60 (90)
NO. OF DAYS OPERATED AT HOME STATION	60	200(90)	900	3000 (90)
NO. OF HOURS OPERATED AT HOME STATION	360	1200(90)	5400	18000 (90)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1600	2700(80)	24000	45000 (80)
NO. OF TIMES DEPLOYED	2	6(90)	30	90 (90)
NO. OF DAYS DEPLOYED	60	102(90)	900	1530 (90)
NO. OF MILES DEPLOYED OVER PAVED ROADS	644	2268(80)	9600	34020 (80)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	4	48(80)	60	720 (80)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	1	1.5(37)	15	22.5 (37)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1440	2448(90)	21600	36720 (90)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	2430	4080(80)	36450	61200

**ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
EGYPT	FALL		
KOREA	ALL		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
SAUDI ARABIA	ALL		
WORLDWIDE	ALL		
CONUS	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF:

NOMINAL 3MEDIAN 4 UPPER (90) MAXIMUM 4 MEDIAN UPPER 4 (90)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA X INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TCC-76

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.2(70)	0	3 (70)
NO. OF TIMES SETUP AT HOME STATION	2	5 (70)	30	75 (70)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	4 (70)	30	60 (70)
NO. OF TIMES SETUP ON JACKS	2	4 (70)	30	60 (70)
NO. OF DAYS OPERATED AT HOME STATION	60	200 (70)	900	3000 (70)
NO. OF HOURS OPERATED AT HOME STATION	360	1200 (70)	5400	18000 (70)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1600	2700 (56)	24000	40500 (70)
NO. OF TIMES DEPLOYED	2	6 (70)	30	90 (70)
NO. OF DAYS DEPLOYED	60	102 (56)	900	1530 (56)
NO. OF MILES DEPLOYED OVER PAVED ROADS	808	4536 (56)	12120	68040 (56)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	4	48 (56)	60	720 (56)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	1	1.5(16)	15	22.5 (16)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1440	2448 (56)	21600	36720 (56)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	2700	4080 (56)	40500	61200 (56)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
EGYPT	FALL		
KOREA	WINTER		
NORTH CAROLINA	FALL, SUMMER		
MISSISSIPPI	FALL		
SOUTH CAROLINA	SUMMER		
FLORIDA	SUMMER		
EUROPE (POSSIBLE)	SUMMER		
FT. DRUM	WINTER		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
EUROPE (CENTRAL)	ALL		
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK_____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN_____ WEB SLING_____

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE_____ FORKLIFT_____

407L_____ WRECKER_____

NO. OF PERSONNEL ON ROOF:(MEDIAN)

NOMINAL 3 UPPER 4 (91) MAXIMUM 4 UPPER 4 (91)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA_____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD_____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TCC-77

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	1	0	15 (37)
NO. OF TIMES SETUP AT HOME STATION	2	5 (37)	30	75 (37)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	4 (37)	30	60 (37)
NO. OF TIMES SETUP ON JACKS	2	4 (37)	30	60 (37)
NO. OF DAYS OPERATED AT HOME STATION	60	200 (37)	900	3000 (37)
NO. OF HOURS OPERATED AT HOME STATION	360	1200 (37)	5400	18000 (37)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1880	2700 (26)	28200	40500 (26)
NO. OF TIMES DEPLOYED	2	6 (37)	30	90 (37)
NO. OF DAYS DEPLOYED	75	102 (26)	1125	1530 (26)
NO. OF MILES DEPLOYED OVER PAVED ROADS	322	4536 (26)	4830	68040 (26)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	17	96 (26)	255	1440 (26)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	1.2	-	18	-
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1800	2448 (26)	27000	36720 (26)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	2430	4080 (26)	36450	61200 (26)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
EGYPT	FALL		
KOREA	WINTER		
NORTH CAROLINA	FALL, SUMMER		
MISSISSIPPI	FALL		
SOUTH CAROLINA	SUMMER		
FLORIDA	SUMMER		
EUROPE (POSSIBLE)	SUMMER		
FT. DRUM	WINTER		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
EUROPE (CENTRAL)	ALL		
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK_____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN_____ WEB SLING_____

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE_____ FORKLIFT_____

407L_____ WRECKER_____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 3 UPPER 4 (97) MAXIMUM 4 UPPER 4 (97)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA_____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD_____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TGC

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.18	0	2.7
NO. OF TIMES SETUP AT HOME STATION	4	25	60	375
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	8	15	120
NO. OF TIMES SETUP ON JACKS	0	6	0	90
NO. OF DAYS OPERATED AT HOME STATION	90	312	1350	4680
NO. OF HOURS OPERATED AT HOME STATION	600	3120	9000	46800
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2400	8000	36000	120000
NO. OF TIMES DEPLOYED	4	12	60	180
NO. OF DAYS DEPLOYED	63	365	945	5475
NO. OF MILES DEPLOYED OVER PAVED ROADS	880	15240	13200	228600
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	40	480	600	7200
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0.4	5(99)	6	75 (99)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1512	8760	22680	131400
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1440	11520	21600	172800

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CONUS	ALL		
GERMANY	ALL		
PANAMA	WINTER		
SAUDI ARABIA	ALL		
DENMARK	ALL		
KOREA	ALL		
OKINAWA	ALL		
EGYPT	FALL		
JAPAN	ALL		
ALASKA	WINTER		
NORWAY	ALL		
MOJAVE DESERT	SUMMER		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
PACAF	ALL		
PHILIPPINES	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2 — MAXIMUM 2 UPPER 4

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA X — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TGC-20

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	.1(47)	0	1.5(47)
NO. OF TIMES SETUP AT HOME STATION	6.8	12 (63)	102	180 (63)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	5 (63)	0	75 (63)
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	30	100 (63)	450	1500 (63)
NO. OF HOURS OPERATED AT HOME STATION	240	700 (63)	3600	1500 (63)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	900	7000 (63)	13500	105000 (63)
NO. OF TIMES DEPLOYED	4	6 (63)	60	90 (63)
NO. OF DAYS DEPLOYED	43.5	90 (63)	652.5	1350 (63)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1700	4040 (63)	25500	60600 (63)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	150	240 (56)	2250	3600 (56)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0.6(56)	0	9 (56)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1044	2160 (63)	15660	32400 (63)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	750	3150 (63)	11250	47250 (63)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
TEXAS	SUMMER		
SOUTH CAROLINA	WINTER		
LOCAL AREAS	ALL		
CONUS	ALL		
OVERSEAS	ALL		
FLORIDA	FALL		
NORTH CAROLINA	SPRING		
ILLINOIS	SUMMER/SPRING		
KOREA	FALL		
CALIFORNIA	ALL		
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ — WEB SLING _____

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ — FORKLIFT _____

407L _____ — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 0 UPPER 1 (56) — MAXIMUM 0 UPPER 2 (56)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE _____

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TGC-26

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	< 0.1	0.2(87)	< 1.5	3 (87)
NO. OF TIMES SETUP AT HOME STATION	4	12 (87)	60	180 (87)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	4 (87)	30	60 (87)
NO. OF TIMES SETUP ON JACKS	4	8 (87)	60	120 (87)
NO. OF DAYS OPERATED AT HOME STATION	150	200 (87)	2250	3000 (87)
NO. OF HOURS OPERATED AT HOME STATION	1200	1200 (87)	18000	18000 (87)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	7500	8000 (87)	112500	120000 (87)
NO. OF TIMES DEPLOYED	4	5 (87)	60	75 (87)
NO. OF DAYS DEPLOYED	96	1125 (70)	1440	1687.5(70)
NO. OF MILES DEPLOYED OVER PAVED ROADS	808	8000 (87)	12120	120000 (87)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	16	75 (70)	240	1125 (70)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	1.5(87)	0	225 (87)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	2304	2700 (70)	34560	40500 (70)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1968.75	4800 (70)	29531.25	72000 (70)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
EGYPT	FALL		
KOREA	WINTER		
NORTH CAROLINA	FALL,SUMMER		
MISSISSIPPI	FALL		
SOUTH CAROLINA	SUMMER		
FLORIDA	SUMMER		
EUROPE (POSSIBLE)	SUMMER		
FT. DRUM	WINTER		
WASHINGTON	SUMMER/WINTER		
NEW MEXICO	WINTER		
ALASKA	WINTER		
IDAHO	SUMMER		
WORLDWIDE	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 (87) MAXIMUM 4 UPPER 4 (87)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TGC-27

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0 (99)	0	3*
NO. OF TIMES SETUP AT HOME STATION	6	25 (97)	90	375 (97)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	8 (99)	30	120 (99)
NO. OF TIMES SETUP ON JACKS	0	4 (99)	0	60 (99)
NO. OF DAYS OPERATED AT HOME STATION	90	350 (99)	1350	5250 (99)
NO. OF HOURS OPERATED AT HOME STATION	720	8400 (99)	10800	126000 (99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2400	6125 (99)	36000	91875 (99)
NO. OF TIMES DEPLOYED	5	12 (99)	75	180 (99)
NO. OF DAYS DEPLOYED	240	1080 (99)	3600	16[illegible] (99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1400	15240 (99)	21000	228600 (99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	70	480 (99)	1050	7200 (99)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	4 (99)	0	60 (99)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	5760	25920 (99)	86400	388800 (99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	4440	21600 (99)	66600	324000 (99)

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
NORWAY	ALL	EGYPT	FALL
MIDDLE EAST	ALL	PANAMA	WINTER
NORTH AFRICA	ALL		
EUROPE (CENTRAL)	ALL		
NORTH EAST USA	SUMMER		
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		
SOUTHWEST USA	ALL		
PACAF	ALL		
CONUS	ALL		
KOREA	ALL		
PHILIPPINES	ALL		
JAPAN	ALL		
OKINAWA	ALL		
VIETNAM	ALL		
ALASKA	WINTER		
DESERT	SUMMER		
MOJAVE DESERT	SUMMER		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2 (97) — MAXIMUM 2 UPPER 3 (97)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TGC-28

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.6(70)	0	9 (70)
NO. OF TIMES SETUP AT HOME STATION	3	4 (63)	45	60 (63)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	1 (63)	0	15 (63)
NO. OF TIMES SETUP ON JACKS	0	3 (70)	0	45 (70)
NO. OF DAYS OPERATED AT HOME STATION	280	365 (70)	4200	5475 (70)
NO. OF HOURS OPERATED AT HOME STATION	2920	0 ( )	43800	46800 (56)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2920	6240 (70)	43800	93600 (70)
NO. OF TIMES DEPLOYED	3	4 (76)	45	60 (76)
NO. OF DAYS DEPLOYED	33.75	68 (70)	506.25	1020 (70)
NO. OF MILES DEPLOYED OVER PAVED ROADS	480	2000 (70)	7200	30000 (70)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	27	80 (70)	405	1200 (70)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	5 (63)	0	75 (63)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	810	1632 (70)	12150	24480 (70)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	654	1260 (63)	9810	18900 (63)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
GEORGIA	SUMMER		
TEXAS	SPRING/SUMMER		
SOUTH CAROLINA	SUMMER		
NEW YORK	WINTER		
NEW ENGLAND	SUMMER		
EUROPE	ALL		
FLORIDA	ALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		
DENMARK	ALL		

MOBILIZING METHOD(S):

TRUCK		MOBILIZER	X

TIEDOWN METHOD(S):

CHAIN		WEB SLING	X
CABLE		BOLTED	X

LOAD/UNLOAD METHOD(S):

CRANE		FORKLIFT	X
407L		WRECKER	

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL	0.5 UPPER 2 (63)	MAXIMUM	0.5 UPPER 2 (63)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA		INSPECTION/MAINTENANCE	X
CAMOUFLAGE	X	ERECTION/STRIKE	
LOAD/UNLOAD			

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TGC-621

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	5	10 (26)	75	150 (26)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	5	10 (26)	75	150 (26)
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	28.5	52 (26)	427.5	780 (26)
NO. OF HOURS OPERATED AT HOME STATION	26	52 (26)	390	780 (26)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	104	-	1560	-
NO. OF TIMES DEPLOYED	7.2	10 (26)	108	150 (26)
NO. OF DAYS DEPLOYED	68.6	90 (26)	1029.4	1350 (26)
NO. OF MILES DEPLOYED OVER PAVED ROADS	340	500 (26)	5100	7500 (26)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	95	100 (26)	1425	1500 (26)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1647	2160 (26)	24705	32400 (26
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	94.5	-	1417.5	-

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER

TIEDOWN METHOD(S):

CHAIN — WEB SLING

CABLE X — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 0.5 UPPER 1 (26) — MAXIMUM 0.5 UPPER 1 (26)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TMQ-28

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.13(90)	0	2.0 (90)
NO. OF TIMES SETUP AT HOME STATION	2	5 (90)	30	75 (90)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	4 (90)	30	60 (90)
NO. OF TIMES SETUP ON JACKS	2	4 (90)	30	60 (90)
NO. OF DAYS OPERATED AT HOME STATION	60	200 (90)	900	3000 (90)
NO. OF HOURS OPERATED AT HOME STATION	360	1200 (90)	5400	18000 (90)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1200	2700 (80)	18000	40500 (80)
NO. OF TIMES DEPLOYED	2	6 (90)	30	90 (90)
NO. OF DAYS DEPLOYED	60	102 (80)	900	1530 (80)
NO. OF MILES DEPLOYED OVER PAVED ROADS	808	4536 (80)	12120	68040 (80)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	30	96 (80)	450	1440 (80)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	1.5	-	1.5	-
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1440	2448 (80)	21600	36720 (80)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	2700	4080 (80)	40500	61200 (80)

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
EGYPT	FALL		
KOREA	WINTER		
NORTH CAROLINA	FALL, SUMMER		
MISSISSIPPI	FALL		
SOUTH CAROLINA	SUMMER		
FLORIDA	SUMMER		
EUROPE (POSSIBLE)	SUMMER		
FT. DRUM	WINTER		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
EUROPE (CENTRAL)	ALL		
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 3 UPPER 4 (91) MAXIMUM 4 UPPER 4 (91)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TPB-1

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	5.2	10(26)	78	150 (26)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.8	10(26)	42	150 (26)
NO. OF TIMES SETUP ON JACKS	0	1.5(26)	0	22.5(26)
NO. OF DAYS OPERATED AT HOME STATION	225	260(26)	3375	3900 (26)
NO. OF HOURS OPERATED AT HOME STATION	970	2080(26)	14550	31200 (26)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	5200	9000(16)	78000	135000 (16)
NO. OF TIMES DEPLOYED	5.5	10(26)	82.5	150 (26)
NO. OF DAYS DEPLOYED	68.6	91(26)	1029.4	1365 (26)
NO. OF MILES DEPLOYED OVER PAVED ROADS	450	2782(26)	6750	41730 (26)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	114.6	200(26)	1718.25	3000 (26)
NO. OF TIMES HELILIFTED	0	3.5(26)	0	52.5(26)
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1647	2184(26)	24705	32760 (26)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	400	4550(16)	6000	68250 (16)

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
FLORIDA	ALL		
SOUTH CAROLINA	SUMMER		
LOS ANGELES	SPRING		
EUROPE (CENTRAL)	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

. CHAIN — WEB SLING

CABLE — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2 (94) — MAXIMUM 1.5 UPPER 2 (94)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TPN/MPN

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.25	0.25(94)	3.8	3.8(94)
NO. OF TIMES SETUP AT HOME STATION	2	7 (94)	30	105 (94)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0.8	8 (94)	12	120 (94)
NO. OF TIMES SETUP ON JACKS	2	8 (94)	30	120 (94)
NO. OF DAYS OPERATED AT HOME STATION	200	260 (94)	3000	3900 (94)
NO. OF HOURS OPERATED AT HOME STATION	1200	2080 (94)	18000	31200 (94)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	4160	6000 (94)	62400	90000 (94)
NO. OF TIMES DEPLOYED	2	6 (94)	30	90 (94)
NO. OF DAYS DEPLOYED	270	279 (94)	4050	4185 (94)
NO. OF MILES DEPLOYED OVER PAVED ROADS	3750	8200 (76)	56250	123000 (76)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	9	108 (94)	135	1620 (94)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	1	-	15	-
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	6480	6696 (94)	97200	100440 (94)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	5022	6940 (94)	75330	89100 (94)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
PHILIPPINES	ALL		
JAPAN	ALL		
OKINAWA	ALL		
THAILAND	ALL		
VIETNAM	ALL		
SAUDI ARABIA	ALL		
WORLDWIDE	ALL		
CALIFORNIA	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING

CABLE — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L — WRECKER

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 4 UPPER 4 (94) — MAXIMUM 5.5 UPPER 6 (94)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/MPN-14

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.2	.25(76)	3	3.8(76)
NO. OF TIMES SETUP AT HOME STATION	6	7(76)	90	105 (76)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	6	8(76)	90	120 (76)
NO. OF TIMES SETUP ON JACKS	2	8(76)	30	120 (76)
NO. OF DAYS OPERATED AT HOME STATION	210	260(76)	3150	3900 (76)
NO. OF HOURS OPERATED AT HOME STATION	1680	2080(70)	25200	31200 (70)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	4620	6000(70)	69300	90000 (70)
NO. OF TIMES DEPLOYED	3	6(76)	45	90 (76)
NO. OF DAYS DEPLOYED	225	270(76)	3375	4050 (76)
NO. OF MILES DEPLOYED OVER PAVED ROADS	3750	8200(76)	56250	123000 (76)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	36	108(76)	540	1620 (76)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	1(76)	0	15 (76)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	5400	6480(76)	81000	97200 (76)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	3600	5940(76)	54000	89100 (76)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
PHILIPPINES	ALL		
JAPAN	ALL		
OKINAWA	ALL		
THAILAND	ALL		
VIETNAM	ALL		
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		
CALIFORNIA	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING

CABLE — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L — WRECKER

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 3 UPPER 4 (76) — MAXIMUM 6 UPPER 6 (76)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TPN-19

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	-	3*
NO. OF TIMES SETUP AT HOME STATION	2	2(47)	30	30 (47)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	0	0	0
NO. OF TIMES SETUP ON JACKS	2	2(47)	30	30 (47)
NO. OF DAYS OPERATED AT HOME STATION	153	153(47)	2295	2295 (47)
NO. OF HOURS OPERATED AT HOME STATION	719	719(47)	10786.5	10786 (47)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2754	2754(47)	41310	41310 (47)
NO. OF TIMES DEPLOYED	1.5	1.5(47)	22.5	22.5(47)
NO. OF DAYS DEPLOYED	279	279(47)	4185	4185 (47)
NO. OF MILES DEPLOYED OVER PAVED ROADS	-	-	-	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	6	6(47)	90	90 (47)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	6696	6696(47)	100440	100440 (47)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	5022	5022(47)	75330	75330 (47)

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 4 UPPER 4 (89) MAXIMUM 5 UPPER 5 (89)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TPS

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.3(99)	0	4.5(99)
NO. OF TIMES SETUP AT HOME STATION	3	16 (99)	45	240 (99)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	10 (99)	15	150 (99)
NO. OF TIMES SETUP ON JACKS	3	14 (99)	45	210 (99)
NO. OF DAYS OPERATED AT HOME STATION	230	365 (99)	3450	5475 (99)
NO. OF HOURS OPERATED AT HOME STATION	1880	8760 (99)	28200	131400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	4000	36500 (99)	60000	547500 (99)
NO. OF TIMES DEPLOYED	2	10 (99)	30	150 (99)
NO. OF DAYS DEPLOYED	25	122.5(99)	375	1838 (99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	490	4900 (99)	7350	73500 (99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	40.4	1600 (99)	606	24000 (99)
NO. OF TIMES HELILIFTED	0	1 (99)	0	15 (99)
NO. OF TIMES DEPLOYED BY AIR	0	1 (96)	0	15 (96)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	600	2940 (99)	9000	44100 (99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	470	4500 (99)	7050	67500 (99)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CONUS	ALL		
ALASKA	WINTER		
PANAMA	WINTER		
EUROPE	ALL		
ITALY	ALL		
GERMANY	ALL		
DENMARK	ALL		
SAUDI ARABIA	ALL		
PACAF	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 3 (99) — MAXIMUM 2 UPPER 4 (99)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA X — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TPS-43

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.3	0	4.5(99)
NO. OF TIMES SETUP AT HOME STATION	3	16 (99)	45	240 (99)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	10 (99)	15	150 (99)
NO. OF TIMES SETUP ON JACKS	2.5	14 (99)	37.5	210 (99)
NO. OF DAYS OPERATED AT HOME STATION	240	365 (99)	3600	5475 (99)
NO. OF HOURS OPERATED AT HOME STATION	2000	8760 (99)	30000	131400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2825	36500 (99)	42375	547500 (99)
NO. OF TIMES DEPLOYED	3	10 (99)	45	150 (99)
NO. OF DAYS DEPLOYED	27.1	122.5(99)	406.5	1838 (99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	490	4900 (99)	7350	73500 (99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	45	1600 (99)	675	24000 (99)
NO. OF TIMES HELILIFTED	0	1 (99)	0	15 (99)
NO. OF TIMES DEPLOYED BY AIR	0	1 (99)	0	15 (99)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	675	2940 (99)	10125	44112 (99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	490	4500 (99)	7350	67500 (99)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
NORTHERN GERMANY	ALL		
SAUDI ARABIA	ALL		
SOUTHWEST USA	ALL		
PACAF	ALL		
CONUS	SUMMER		
ALASKA	WINTER		
DESERT	SUMMER		
PANAMA	WINTER		
EUROPE	ALL		
EUROPE (CENTRAL)	ALL		
ITALY	ALL		
GERMANY	ALL		
DENMARK	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 (88) — MAXIMUM 2 UPPER 2 (88)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TPS-44

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.1	-	1.5	3*
NO. OF TIMES SETUP AT HOME STATION	1	-	15	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	-	15	-
NO. OF TIMES SETUP ON JACKS	3	-	45	-
NO. OF DAYS OPERATED AT HOME STATION	200	-	3000	-
NO. OF HOURS OPERATED AT HOME STATION	800	-	12000	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1000	-	15000	-
NO. OF TIMES DEPLOYED	1	-	15	-
NO. OF DAYS DEPLOYED	15	-	225	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	600	-	9000	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	11	-	165	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	360	-	5400	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	75	-	1125	-

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
GEORGIA	SUMMER		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 0 UPPER - MAXIMUM 0 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRC/MRC

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	.1	0	1.5
NO. OF TIMES SETUP AT HOME STATION	4	15	60	225
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	15	30	225
NO. OF TIMES SETUP ON JACKS	0	1	0	15
NO. OF DAYS OPERATED AT HOME STATION	120	350	1800	5250
NO. OF HOURS OPERATED AT HOME STATION	760	5110	11400	76650
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1500	7665	22500	114975
NO. OF TIMES DEPLOYED	4	12	60	180
NO. OF DAYS DEPLOYED	60	200	900	3000
NO. OF MILES DEPLOYED OVER PAVED ROADS	1800	5200	27000	78000
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	83.6	360	1254	5400
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	4	0	60
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1440	4800	21600	72000
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	688.1	5292	10321.5	79380

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR
[illegible]	WINTER
[illegible]	ALL
[illegible] EAST	ALL
[illegible] AFRICA	ALL
[illegible]	ALL
ITALY	ALL
[illegible]	ALL
[illegible]	ALL
NORTHERN GERMANY	ALL
SAUDI ARABIA	ALL
ADELAIDE	ALL
SOUTHWEST USA	ALL
PACAF	ALL
KOREA	ALL
PHILIPPINES	ALL
JAPAN	ALL
OKINAWA	ALL
THAILAND	ALL
VIETNAM	ALL

WHERE DEPLOYED	SEASON OF THE YEAR
ALASKA	[illegible]
MOJAVE OR EAT	[illegible]
CONUS	[illegible]
DESERT	[illegible]
OVERSEAS	[illegible]

MOBILIZING METHOD(S):

TRUCK ___ / ___ MOBILIZER ___ / ___

TIEDOWN METHOD(S):

CHAIN ___ / ___ WEB SLING ___ / ___

CABLE ___ / ___ BOLTED ___ / ___

LOAD/UNLOAD METHOD(S):

CRANE ___ / ___ FORKLIFT ___ / ___

407L ___ / ___ WRECKER ___ / ___

NO. OF PERSONNEL ON ROOF: [illegible]

NOMINAL [illegible] MAXIMUM [illegible]

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA ___ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE ___

LOAD/UNLOAD ___

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRC-32

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	3	4 (47)	45	60 (47)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	1 (47)	0	15 (47)
NO. OF TIMES SETUP ON JACKS	1.5	1.5(47)	22.5	22.5(47)
NO. OF DAYS OPERATED AT HOME STATION	300	300 (47)	4500	4500 (47)
NO. OF HOURS OPERATED AT HOME STATION	2700	2700 (47)	40500	40500 (47)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	7200	7200 (47)	108000	108000 (47)
NO. OF TIMES DEPLOYED	3	3 (47)	45	45 (47)
NO. OF DAYS DEPLOYED	45	45 (47)	675	675 (47)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1500	1500 (47)	22500	22500 (47)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	42	42 (47)	630	630 (47)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1080	1080 (47)	16200	16200 (47)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1080	1080 (47)	16200	16200 (47)

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
USA	SUMMER		
SOUTHWEST USA	ALL		
PACAF	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER

TIEDOWN METHOD(S):

CHAIN X — WEB SLING

CABLE X — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER - — MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRC-36/61

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	4	12	60	180
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	6	30	90
NO. OF TIMES SETUP ON JACKS	0	1	0	15
NO. OF DAYS OPERATED AT HOME STATION	22	100	330	1500
NO. OF HOURS OPERATED AT HOME STATION	192	700	2880	10500
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	550	3750	8250	56250
NO. OF TIMES DEPLOYED	3.8	12	57	180
NO. OF DAYS DEPLOYED	32.3	200	484.5	3000
NO. OF MILES DEPLOYED OVER PAVED ROADS	2020	5050	30300	75750
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	105	780	1575	11700
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	1	0	15
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	775.2	4800	11628	72000
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	807.5	10000	12112.5	150000

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
TEXAS	SUMMER		
SOUTH CAROLINA	WINTER		
ALASKA	WINTER		
KOREA	SPRING/FALL/WINTER		
CONUS	ALL		
OVERSEAS	ALL		
FLORIDA	FALL		
NORTH CAROLINA	SPRING		
ILLINOIS	SUMMER/SPRING		
CALIFORNIA	ALL		
WASHINGTON	SUMMER/WINTER		
NEW MEXICO	WINTER		
IDAHO	SUMMER		
WORLDWIDE	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2.5 — MAXIMUM 2 UPPER 4

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRC-87

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	<0.1	1.0(99)	0.6	150 (99)
NO. OF TIMES SETUP AT HOME STATION	3	12 (99)	45	180 (99)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	5 (99)	0	75 (99)
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	280	365(99)	4200	5475 (99)
NO. OF HOURS OPERATED AT HOME STATION	2550	8760(99)	38250	131400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	3375	10950(99)	50625	164250 (99)
NO. OF TIMES DEPLOYED	3	7(99)	45	105 (99)
NO. OF DAYS DEPLOYED	33.8	90(99)	507	1350 (99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1170	11200(99)	17550	168000 (99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	70	400(99)	1050	6000 (99)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	1(99)	0	15 (99)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	811.2	2160(99)	12168	32400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	436.5	2100(99)	6547.5	31500 (99)

**ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR
ALASKA	WINTER
DESERT	SUMMER
GEORGIA	SUMMER
TEXAS	SPRING/SUMMER
SOUTH CAROLINA	SUMMER/SPRING
NEW YORK	WINTER
NEW ENGLAND	SUMMER
OREGON	SUMMER
WASHINGTON	WINTER/SUMMER
PANAMA	WINTER
SOUTH IDAHO	SUMMER
EUROPE	ALL
MICHIGAN	SUMMER
FLORIDA	FALL/SUMMER
NORTHEAST USA	SUMMER
GERMANY	ALL
SAUDI ARABIA	ALL
DENMARK	ALL
SOUTHWEST USA	ALL

WHERE DEPLOYED	SEASON OF THE YEAR
PACAF	ALL

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 1 (89) — MAXIMUM 1 UPPER 1 (89)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRC-96

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	1.5	1.5(26)	22.5	22.5 (26)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1.5	1.5(26)	22.5	22.5 (26)
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	18	18 (26)	270	270 (26)
NO. OF HOURS OPERATED AT HOME STATION	144	144 (26)	2160	2160 (26)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	375	375 (26)	5625	5625 (26)
NO. OF TIMES DEPLOYED	1.5	1.5(26)	22.5	22.5 (26)
NO. OF DAYS DEPLOYED	12.75	12.75(26)	191.25	191.25(26)
NO. OF MILES DEPLOYED OVER PAVED ROADS	765	765 (26)	11475	11475 (26)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	33	33 (26)	495	495 (26)
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	306	306 (26)	4590	4590 (26)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	318.75	318.75(26)	4781.25	4781.25(26)

* Assumes 5 year cycle

**Assumes 24 Hour/Day Operation

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CONUS	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (Median)

NOMINAL 0 UPPER - MAXIMUM 0 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRC-97

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	.14	0	2.1
NO. OF TIMES SETUP AT HOME STATION	4	35	60	525
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	21	30	315
NO. OF TIMES SETUP ON JACKS	0	3	0	45
NO. OF DAYS OPERATED AT HOME STATION	180	365	2700	5475
NO. OF HOURS OPERATED AT HOME STATION	1500	5110	22500	76650
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1500	7665	22500	114975
NO. OF TIMES DEPLOYED	6	12	90	180
NO. OF DAYS DEPLOYED	84	252	1260	3780
NO. OF MILES DEPLOYED OVER PAVED ROADS	1200	6000	18000	90000
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	80	360	1200	5400
NO. OF TIMES HELILIFTED	0	0.1	0	1.5
NO. OF TIMES DEPLOYED BY AIR	0	4	0	60
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	2016	6048	30240	90720
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	600	5292	9000	79380

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR
PANAMA	WINTER
NORWAY	ALL
MIDDLE EAST	ALL
NORTH AFRICA	ALL
EUROPE	ALL
ITALY	ALL
GERMANY	ALL
DENMARK	ALL
NORTHERN GERMANY	ALL
SAUDI ARABIA	ALL
WORLD WIDE	ALL
PACAF	ALL
KOREA	ALL
PHILIPPINES	ALL
JAPAN	ALL
OKINAWA	ALL

WHERE DEPLOYED	SEASON OF THE YEAR
THAILAND	ALL
VIETNAM	ALL
ALASKA	WINTER/SUMMER
MOJAVE DESERT	SUMMER
DESERT	SUMMER
CONUS	ALL
OVERSEAS	ALL

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2 — MAXIMUM 1 UPPER 2

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/MRC-113

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.2	-	3.8	-
NO. OF TIMES SETUP AT HOME STATION	1	-	15	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	-	0	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	227	-	3405	-
NO. OF HOURS OPERATED AT HOME STATION	4086	-	61290	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1679.8	-	25197	-
NO. OF TIMES DEPLOYED	1	-	15	-
NO. OF DAYS DEPLOYED	45	-	675	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	8000	-	120000	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	20	-	300	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	1	-	15	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1080	-	25920	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	333	-	4995	-

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CALIFORNIA	SPRING		
SOUTH CAROLINA	SPRING		
NEW JERSEY	WINTER		
ARIZONA	FALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER - MAXIMUM 4 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRC-136

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	2	6(26)	30	90 (26)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	11	20(26)	165	300 (26)
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	50	75(26)	750	1125 (26)
NO. OF HOURS OPERATED AT HOME STATION	400	600(26)	6000	9000 (26)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1200	3750(26)	18000	56250 (26)
NO. OF TIMES DEPLOYED	12.5	20(26)	187.5	300 (26)
NO. OF DAYS DEPLOYED	200	200(16)	3000	3000 (16)
NO. OF MILES DEPLOYED OVER PAVED ROADS	2350	3200(26)	35250	48000 (26)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	110	200(26)	1650	3000 (26)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	10	-	150	-
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	4800	4800(16)	72000	72000 (16)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	4800	4800(16)	72000	72000 (16)

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
ALASKA	WINTER		
KOREA	SPRING		
MOJAVE DESERT	SUMMER		
CALIFORNIA	ALL		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
EUROPE (CENTRAL)	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 1 (26) — MAXIMUM 1 UPPER 1 (26)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/GRM

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.91(99)	0	13.6(99)
NO. OF TIMES SETUP AT HOME STATION	4	16(99)	60	240 (99)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	3.5	10(99)	52.5	150 (99)
NO. OF TIMES SETUP ON JACKS	0	3(99)	0	45 (99)
NO. OF DAYS OPERATED AT HOME STATION	190	365(99)	2850	5475 (99)
NO. OF HOURS OPERATED AT HOME STATION	1040	8760(99)	15600	131400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1200	36400(99)	18000	546000 (99)
NO. OF TIMES DEPLOYED	4	10(99)	60	150 (99)
NO. OF DAYS DEPLOYED	28.1	140(99)	421.5	2100 (99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	500	4900(99)	7500	73500 (99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	55	360(99)	825	5400 (99)
NO. OF TIMES HELILIFTED	0	1(99)	0	15 (99)
NO. OF TIMES DEPLOYED BY AIR	0	0.2(99)	0	3 (99)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	674.4	3360(99)	10116	50400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	252.5	4480(99)	3787.5	67200 (99)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
PANAMA	WINTER		
CONUS	ALL		
ALASKA	SUMMER/WINTER		
WORLDWIDE	ALL		
KOREA	ALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		
PACAF	ALL		
EUROPE	ALL		
ITALY	ALL		
DENMARK	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 (99) — MAXIMUM 2 UPPER 3 (99)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE --

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/GRM-9

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	0	-	0	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	-	0	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	260	-	3900	-
NO. OF HOURS OPERATED AT HOME STATION	1040	-	15600	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2080	-	31200	-
NO. OF TIMES DEPLOYED	4.5	-	67.5	-
NO. OF DAYS DEPLOYED	47.25	-	708.75	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	180	-	2700	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	90	-	1350	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1134	-	17010	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	378	-	5670	-

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER ____

TIEDOWN METHOD(S):

CHAIN ____ — WEB SLING ____

CABLE X — BOLTED ____

LOAD/UNLOAD METHOD(S):

CRANE ____ — FORKLIFT ____

407L ____ — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER - — MAXIMUM 1 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA ____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE ____

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/GRM-32

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	-	3*
NO. OF TIMES SETUP AT HOME STATION	2	-	30	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	-	0	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	12	-	180	-
NO. OF HOURS OPERATED AT HOME STATION	96	-	1440	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1152	-	17280	-
NO. OF TIMES DEPLOYED	2	-	30	-
NO. OF DAYS DEPLOYED	8	-	120	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	60	-	900	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	80	-	1200	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	192	-	2880	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	768	-	11520	-

* ASSUMES 5 YEAR CYCLE
**ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER ____

TIEDOWN METHOD(S):

CHAIN ____ — WEB SLING ____

CABLE X — BOLTED ____

LOAD/UNLOAD METHOD(S):

CRANE ____ — FORKLIFT ____

407L ____ — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER - — MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA ____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE ____

LOAD/UNLOAD ____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/GRM-48

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	1.2	-	18	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1.5	4 (37)	22.5	60 (37)
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	145	260 (26)	2175	3900 (26)
NO. OF HOURS OPERATED AT HOME STATION	3210	6240 (26)	48150	93600 (26)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	290	520 (26)	4350	7800 (26)
NO. OF TIMES DEPLOYED	1.5	3 (37)	22.5	45 (37)
NO. OF DAYS DEPLOYED	32.25	49.5(26)	483.75	742.5(26)
NO. OF MILES DEPLOYED OVER PAVED ROADS	981	1212 (26)	14715	18180 (26)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	54	81 (26)	810	1215 (26)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	774	1188 (26)	11610	17820 (26)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	99	255 (26)	1485	3825 (26)

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
ALASKA	SUMMER/WINTER		
NEW YORK	SUMMER/WINTER		
SOUTH CAROLINA	SUMMER/WINTER		
MISSISSIPPI	WINTER/SPRING		
MISSOURI	SUMMER		
CALIFORNIA	ALL		
WORLD WIDE	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2 (37) — MAXIMUM 1 UPPER 2 (37)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/GRM-85

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.24	0.91(56)	3.6	13.6(56)
NO. OF TIMES SETUP AT HOME STATION	7	9(37)	105	135 (37)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	7(56)	60	105 (56)
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	208	365(63)	3120	5475 (63)
NO. OF HOURS OPERATED AT HOME STATION	1300	8760(63)	19500	131400 (63)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	495	1560(63)	7425	23400 (63)
NO. OF TIMES DEPLOYED	6.5	9(63)	97.5	135 (63)
NO. OF DAYS DEPLOYED	36	70(63)	540	1050 (63)
NO. OF MILES DEPLOYED OVER PAVED ROADS	450	4900(63)	6750	73500 (63)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	26.5	294(63)	397.5	4410 (63)
NO. OF TIMES HELILIFTED	0	1(63)	0	15 (63)
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	864	1680(63)	12960	25200 (63)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	133	250(63)	1995	3750 (63)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
EUROPE	ALL		
EUROPE (CENTRAL)	ALL		
ITALY	ALL		
GERMANY	ALL		
DENMARK	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING

CABLE — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 (63) — MAXIMUM 2 UPPER 3 (63)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/GRM-94

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.7(99)	0	10 (99)
NO. OF TIMES SETUP AT HOME STATION	4	16(97)	60	240 (97)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	10(99)	60	150 (99)
NO. OF TIMES SETUP ON JACKS	0	3(99)	0	45 (99)
NO. OF DAYS OPERATED AT HOME STATION	180	365(99)	2700	5475 (99)
NO. OF HOURS OPERATED AT HOME STATION	1320	8760(99)	19800	131400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	3240	36400(99)	48600	546000 (99)
NO. OF TIMES DEPLOYED	4	10(99)	60	150 (99)
NO. OF DAYS DEPLOYED	28.1	140(99)	421.5	2100 (99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	500	2250(99)	7500	33750 (99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	54	280(99)	810	4200 (99)
NO. OF TIMES HELILIFTED	0	1(99)	0	15 (99)
NO. OF TIMES DEPLOYED BY AIR	0	0.2(99)	0	3 (99)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	674.4	3360(99)	10116	50400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	765	4480(99)	11475	67200 (99)

**ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
WORLDWIDE	ALL		
PACAF	ALL		
CONUS	ALL		
ALASKA	SUMMER/WINTER		
PANAMA	WINTER		
EUROPE	ALL		
ITALY	ALL		
GERMANY	ALL		
DENMARK	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 (99) — MAXIMUM 2 UPPER 3 (99)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRN

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	30	30 (76)	450	450 (76)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	0	0	0
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	180	180 (76)	2700	2700 (76)
NO. OF HOURS OPERATED AT HOME STATION	1080	1080 (76)	16200	16200 (76)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	5400	5400 (76)	81000	81000 (76)
NO. OF TIMES DEPLOYED	5	5 (70)	75	75 (70)
NO. OF DAYS DEPLOYED	-	-	-	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	-	-	-	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	-	-	-	-
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	-	-	-	-
NO. OF TIMES DEPLOYED BY TRAIN	1	1 (76)	15	15 (76)
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT	-	-	-	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	-	-	-	-

*ASSUMES 5 YEAR CYCLE

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING X

CABLE _____ BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 3 UPPER 3 (76) MAXIMUM 3 UPPER 3 (76)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA X INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRN-26

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	-	3*
NO. OF TIMES SETUP AT HOME STATION	7	-	105	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	-	0	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	120	-	1800	-
NO. OF HOURS OPERATED AT HOME STATION	600	-	9000	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2040	-	30600	-
NO. OF TIMES DEPLOYED	0	-	0	-
NO. OF DAYS DEPLOYED	0	-	0	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	0	-	0	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	-	0	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT	0	-	0	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	0	-	0	-

* ASSUMES 5 YEAR CYCLE

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
WORLDWIDE	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER - MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TRN-31

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	-	3*
NO. OF TIMES SETUP AT HOME STATION	30	30(70)	450	450 (70)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	-	0	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	180	180(70)	2700	2700 (70)
NO. OF HOURS OPERATED AT HOME STATION	1080	1080(70)	16200	16200 (70)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	3600	3600(70)	5400C	54000 (70)
NO. OF TIMES DEPLOYED	5	5(70)	75	75 (70)
NO. OF DAYS DEPLOYED	0	-	0	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	0	-	0	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	-	0	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	1	1(70)	15	15 (70)
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT	0	-	0	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	0	-	0	-

* ASSUMES 5 YEAR CYCLE

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER _____

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING X

CABLE _____ BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE X FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 3 UPPER 3 (91) MAXIMUM 3 UPPER 3 (91)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE TSC/MSC

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	.1	0	1.5
NO. OF TIMES SETUP AT HOME STATION	4	15	60	225
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	7	15	105
NO. OF TIMES SETUP ON JACKS	0	3	0	45
NO. OF DAYS OPERATED AT HOME STATION	130	365	1950	5475
NO. OF HOURS OPERATED AT HOME STATION	800	3960	12000	59400
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2400	10950	36000	164250
NO. OF TIMES DEPLOYED	3	7	45	105
NO. OF DAYS DEPLOYED	50	180	750	2700
NO. OF MILES DEPLOYED OVER PAVED ROADS	960	5600	14400	84000
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	28	243	420	3645
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0.2	5	3	75
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1200	4320	18000	64800
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	900	4320	13500	64800

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
PHILIPPINES	ALL		
JAPAN	ALL		
OKINAWA	ALL		
THAILAND	ALL		
VIETNAM	ALL		
CONUS	ALL		
ALASKA	WINTER		
MOJAVE DESERT	SUMMER		
EGYPT	FALL		
PANAMA	WINTER		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
EUROPE	ALL		
ITALY	ALL		
GERMANY	ALL		
DENMARK	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK	X	MOBILIZER	X

TIEDOWN METHOD(S):

CHAIN	X	WEB SLING	X
CABLE	X	BOLTED	X

LOAD/UNLOAD METHOD(S):

CRANE	X	FORKLIFT	X
407L	X	WRECKER	X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL	1	UPPER	2	MAXIMUM	1 UPPER 3

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA		INSPECTION/MAINTENANCE	X
CAMOUFLAGE	X	ERECTION/STRIKE	
LOAD/UNLOAD	X		

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSC-15

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	1(84)	0	15 (84)
NO. OF TIMES SETUP AT HOME STATION	2	4(91)	30	60 (91)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0.5	1(94)	7.5	15 (94)
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	35	52(87)	525	780 (87)
NO. OF HOURS OPERATED AT HOME STATION	200	312(87)	3000	4680 (87)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	687.5	875(93)	10312.5	13125 (93)
NO. OF TIMES DEPLOYED	2	2(91)	30	30 (91)
NO. OF DAYS DEPLOYED	15	2625(87)	225	393.75 (87)
NO. OF MILES DEPLOYED OVER PAVED ROADS	232	420(93)	3480	6300 (93)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	20	45(89)	300	675 (89)
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	0(89)	0	0 (89)
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	360	630(87)	5400	9450 (87)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	280	375(87)	4200	5625 (87)

** ASSUMES 24 HOUR/DAY OPERATIONS

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
SOUTH CAROLINA	WINTER/SUMMER/SPRING		
USA	SUMMER		
ALASKA	WINTER		
DESERT	SUMMER		
LOCAL AREAS	ALL		
FLORIDA	FALL		
NORTH CAROLINA	SPRING		
ILLINOIS	SUMMER/SPRING		
TEXAS	SPRING		
NEW ENGLAND	SUMMER		
MICHIGAN	SUMMER		
NORTHEAST USA	SUMMER		
NEW YORK	WINTER		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER ____

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED ____

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 (87) — MAXIMUM 2 UPPER 2 (87)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA ____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE ____

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/MSC-22

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	.1(26)	0	1.5(26)
NO. OF TIMES SETUP AT HOME STATION	4.5	12(37)	67.5	180 (37)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	2.5(37)	0	37.5(37)
NO. OF TIMES SETUP ON JACKS	0	2.5(37)	0	37.5(37)
NO. OF DAYS OPERATED AT HOME STATION	24	60(37)	360	900 (37)
NO. OF HOURS OPERATED AT HOME STATION	180	360(37)	2700	5400 (37)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	480	1500(37)	7200	22500 (37)
NO. OF TIMES DEPLOYED	3	4(37)	45	60 (37)
NO. OF DAYS DEPLOYED	37.5	90(37)	562.5	1350 (37)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1000	4040(37)	15000	60600 (37)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	4	150(37)	60	2250 (37)
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	900	2160(37)	13500	32400 (37)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	656.25	1800(37)	9843.75	27000 (37)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
TEXAS	SUMMER		
LOCAL AREAS	ALL		
CONUS	ALL		
OVERSEAS	ALL		
FLORIDA	FALL		
NORTH CAROLINA	SPRING		
ILLINOIS	SUMMER/SPRING		
KOREA	FALL		
CALIFORNIA	ALL		
WORLDWIDE	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN — WEB SLING

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 1 (97) — MAXIMUM 1 UPPER 2 (97)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSC-38

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	.25	-	3.75	-
NO. OF TIMES SETUP AT HOME STATION	2		30	
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0		0	
NO. OF TIMES SETUP ON JACKS	0		0	
NO. OF DAYS OPERATED AT HOME STATION	50		750	
NO. OF HOURS OPERATED AT HOME STATION	400		6000	
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	150		2250	
NO. OF TIMES DEPLOYED	2		30	
NO. OF DAYS DEPLOYED	30		450	
NO. OF MILES DEPLOYED OVER PAVED ROADS	2000		30000	
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	40		40	
NO. OF TIMES HELILIFTED	0		0	
NO. OF TIMES DEPLOYED BY AIR	2		30	
NO. OF TIMES DEPLOYED BY TRAIN	0		0	
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	720		10800	
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	90		1350	

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CALIFORNIA	SPRING		
SOUTH CAROLINA	SPRING		
NEW JERSEY	WINTER		
ARIZONA	FALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 1 (75) MAXIMUM 2 UPPER 2 (75)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSC-53

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	.15	5(76)	2.25	75(76)
NO. OF TIMES SETUP AT HOME STATION	3.5	16(84)	52.5	240(84)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	16(80)	60	240(80)
NO. OF TIMES SETUP ON JACKS	2.5	14(84)	37.5	210(84)
NO. OF DAYS OPERATED AT HOME STATION	190	300(84)	2850	4500(84)
NO. OF HOURS OPERATED AT HOME STATION	1260	4800(80)	18900	72000(80)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	5375	22500(84)	80625	337500(84)
NO. OF TIMES DEPLOYED	4	7(80)	60	105(80)
NO. OF DAYS DEPLOYED	24	70(80)	360	1050(80)
NO. OF MILES DEPLOYED OVER PAVED ROADS	486	4900(76)	7290	73500(76)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	25	280(80)	375	4200(80)
NO. OF TIMES HELILIFTED	0	1(80)	0	15(80)
NO. OF TIMES DEPLOYED BY AIR	0	2(70)	0	30(70)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	576	2000(80)	8640	30000(80)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1000	1680(80)	15000	25200(80)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
GEORGIA	SUMMER		
FT. DRUM	WINTER/SUMMER		
EUROPE	ALL		
EUROPE (CENTRAL)	ALL		
ITALY	ALL		
GERMANY	ALL		
DENMARK	ALL		
ALASKA	WINTER		
MICHIGAN	SUMMER		
FLORIDA	FALL		
MISSISSIPPI	WINTER/SPRING		
MISSOURI	SUMMER		
NORTHERN GERMANY	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING X

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X FORKLIFT _____

407L X WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 (93) MAXIMUM 2 UPPER 3 (93)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSC-60

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	<0.1	0	<1.5
NO. OF TIMES SETUP AT HOME STATION	4	20	60	300
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1.5	7	22.5	105
NO. OF TIMES SETUP ON JACKS	0	4	0	60
NO. OF DAYS OPERATED AT HOME STATION	180	365	2700	5475
NO. OF HOURS OPERATED AT HOME STATION	1440	2160	21600	32400
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	3600	3750	54000	56250
NO. OF TIMES DEPLOYED	4	7	60	105
NO. OF DAYS DEPLOYED	60	94.5	900	1417.5
NO. OF MILES DEPLOYED OVER PAVED ROADS	1200	4040	18000	60600
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	40	150	600	2250
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	1	0(88)	15	0 (88)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1440	2268	21600	34020
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1200	2100	18000	31500

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
EGYPT	FALL	THAILAND	ALL
PANAMA	WINTER	MOJAVE DESERT	SUMMER
NORWAY	ALL	CONUS	ALL
MIDDLE EAST	ALL	OVERSEAS	ALL
NORTH AFRICA	ALL		
EUROPE	ALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		
WORLDWIDE	ALL		
PACAF	ALL		
ALASKA	SUMMER/WINTER		
KOREA	ALL		
PHILIPPINES	ALL		
JAPAN	ALL		
OKINAWA	ALL		

MOBILIZING METHOD(S):

TRUCK	X	MOBILIZER	X

TIEDOWN METHOD(S):

CHAIN	X	WEB SLING	X
CABLE	X	BOLTED	X

LOAD/UNLOAD METHOD(S):

CRANE	X	FORKLIFT	X
407L		WRECKER	X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL	1	UPPER	2	MAXIMUM	1	UPPER	2

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA		INSPECTION/MAINTENANCE	X
CAMOUFLAGE	X	ERECTION/STRIKE	X
LOAD/UNLOAD	X		

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSC-62

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	.11(99)	0	1.6(99)
NO. OF TIMES SETUP AT HOME STATION	4	4	60	60
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1.5	2	22.5	30
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	200	260	3000	3900
NO. OF HOURS OPERATED AT HOME STATION	1600	1460 (92)	24000	21900 (92)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	5000	3750 (92)	75000	56250 (92)
NO. OF TIMES DEPLOYED	3.5	4 (92)	52.5	60 (92)
NO. OF DAYS DEPLOYED	63	68 (90)	945	1020 (90)
NO. OF MILES DEPLOYED OVER PAVED ROADS	700	1120 (92)	10500	16800 (92)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	35	40 (92)	525	600 (92)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	.6	0 (91)	9	0 (91)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1512	1632 (90)	22680	24480 (90)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1575	2812.5(90)	23625	42187.5(90)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
PHILIPPINES	ALL		
JAPAN	ALL		
OKINAWA	ALL		
THAILAND	ALL		
VIETNAM	ALL		
ALASKA	WINTER		
MOJAVE DESERT	SUMMER		
CONUS	ALL		
EGYPT	FALL		
EUROPE	ALL		
PANAMA	WINTER		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
SAUDIA ARABIA	ALL		
WORLDWIDE	ALL		
DENMARK	ALL		

MOBILIZING METHOD(S):

TRUCK X MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT X

407L _____ WRECKER X

NO. OF PERSONNEL ON ROOF:

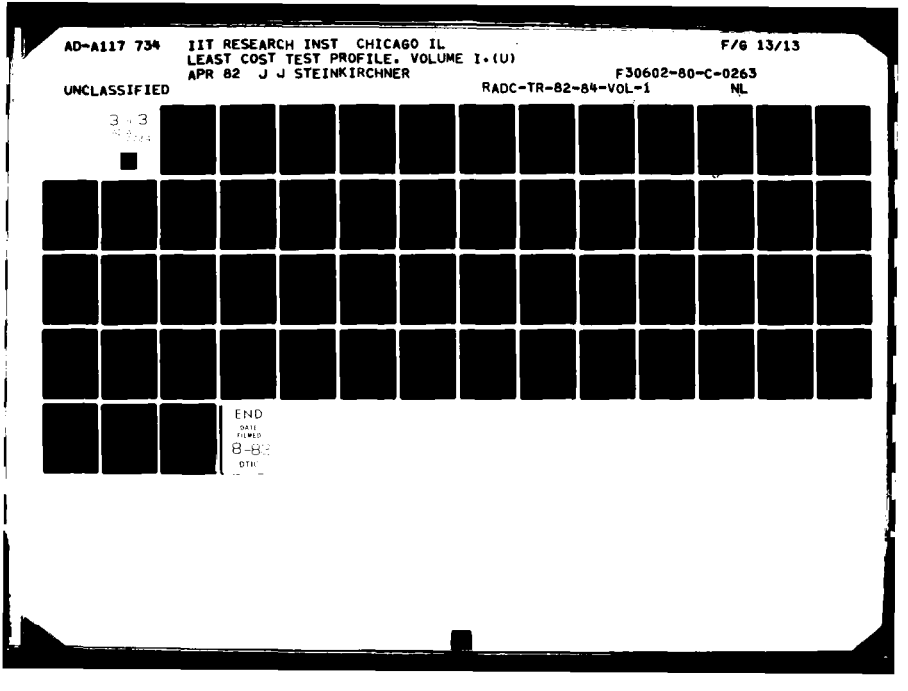
NOMINAL 1 MAXIMUM 2

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____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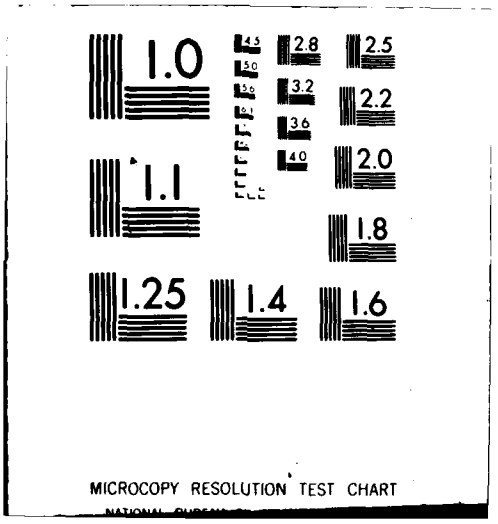
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OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSC-88

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	0	-	0	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	-	0	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	0	-	0	-
NO. OF HOURS OPERATED AT HOME STATION	0	-	0	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	0	-	0	-
NO. OF TIMES DEPLOYED	0	-	0	-
NO. OF DAYS DEPLOYED	0	-	0	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	0	-	0	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	0	-	0	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT	0	-	0	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	0	-	0	-

*ASSUMES 5 YEAR CYCLE

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
-	-		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER _____

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER - MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSQ/MSQ/GSQ

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	2(99)	3*	30 (99)
NO. OF TIMES SETUP AT HOME STATION	3	16(99)	45	240 (99)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.5	16(99)	37.5	240 (99)
NO. OF TIMES SETUP ON JACKS	1	14(99)	15	210 (99)
NO. OF DAYS OPERATED AT HOME STATION	200	365(99)	3000	5475 (99)
NO. OF HOURS OPERATED AT HOME STATION	1512	8760(99)	22680	131400 (99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	2250	153300(99)	33750	2299500 (99)
NO. OF TIMES DEPLOYED	3	16(99)	45	240 (99)
NO. OF DAYS DEPLOYED	31.5	112(99)	472.5	1680 (99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	600	11200(99)	9000	168000 (99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	50	672(99)	750	10800 (99)
NO. OF TIMES HELILIFTED	0	1(99)	0	15 (99)
NO. OF TIMES DEPLOYED BY AIR	0	5(99)	0	75 (99)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-		-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	756	2688	11340	40320 (99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	523.1	8820(99)	7846.5	132300 (99)

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
NORTHERN GERMANY	ALL		
SAUDI ARABIA	ALL		
NORTH CAROLINA	SPRING		
WORLDWIDE	ALL		
CONUS	ALL		
KOREA	ALL		
ALASKA	WINTER/SUMMER		
MOJAVE DESERT	SUMMER		
PANAMA	WINTER		
EUROPE	ALL		
EUROPE (CENTRAL)	ALL		
ITALY	ALL		
GERMANY	ALL		
DENMARK	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 10 (99) — MAXIMUM 2 UPPER 10 (99)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/MSQ-10

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	-	3*
NO. OF TIMES SETUP AT HOME STATION	3.8	-	57	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.2	-	33	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	1	-	15	-
NO. OF HOURS OPERATED AT HOME STATION	215	-	3225	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1280	-	19200	-
NO. OF TIMES DEPLOYED	4	-	60	-
NO. OF DAYS DEPLOYED	33	-	495	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	1500	-	22500	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	91	-	1365	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	792	-	11880	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	660	-	9900	-

* ASSUMES 5 YEAR CYCLE
**ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
ALASKA	WINTER		
KOREA	SPRING		
MOJAVE DESERT	SUMMER		
CALIFORNIA	ALL		
WORLDWIDE	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER

TIEDOWN METHOD(S):

CHAIN — WEB SLING

CABLE — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 1 (75) — MAXIMUM 1.5 UPPER 2 (75)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSQ-61

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	.2	2(90)	3.1	30 (90)
NO. OF TIMES SETUP AT HOME STATION	4.5	16(90)	67.5	240 (90)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	16(87)	60	240 (87)
NO. OF TIMES SETUP ON JACKS	1.5	14(90)	22.5	210 (90)
NO. OF DAYS OPERATED AT HOME STATION	200	300(87)	3000	4500 (87)
NO. OF HOURS OPERATED AT HOME STATION	1580	4800(84)	23700	72000 (84)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	6240	225000(87)	93600	337500 (87)
NO. OF TIMES DEPLOYED	4	16(87)	60	240 (87)
NO. OF DAYS DEPLOYED	25	112(87)	375	1680 (87)
NO. OF MILES DEPLOYED OVER PAVED ROADS	500	11200(87)	7500	168000 (87)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	25	672(87)	375	10080 (87)
NO. OF TIMES HELILIFTED	0	1(90)	0	15 (90)
NO. OF TIMES DEPLOYED BY AIR	0	2(87)	0	30 (87)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	600	2688(87)	9000	40320 (87)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1000	5600(87)	15000	84000 (87)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
GEORGIA	SUMMER		
TEXAS	SPRING		
EUROPE	ALL		
EUROPE (CENTRAL)	ALL		
ITALY	ALL		
GERMANY	ALL		
DENMARK	ALL		
ALASKA	WINTER		
MICHIGAN	SUMMER		
FLORIDA	FALL		
MISSISSIPPI	WINTER/SPRING		
MISSOURI	SUMMER		
NORTHEAST USA	SUMMER		
NORTHERN GERMANY	ALL		

MOBILIZING METHOD(S):

TRUCK	X	MOBILIZER	X

TIEDOWN METHOD(S):

CHAIN	X	WEB SLING	X
CABLE	X	BOLTED	X

LOAD/UNLOAD METHOD(S):

CRANE	X	FORKLIFT	X
407L	X	WRECKER	X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL	2	UPPER	3 (90)
MAXIMUM	2	UPPER	3 (90)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA		INSPECTION/MAINTENANCE	X
CAMOUFLAGE	X	ERECTION/STRIKE	X
LOAD/UNLOAD			

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSQ-91

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.3	0.9(37)	4.2	13.4(87)
NO. OF TIMES SETUP AT HOME STATION	4	5(56)	60	75 (56)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	5(26)	15	75 (26)
NO. OF TIMES SETUP ON JACKS	4.5	10(56)	67.5	150 (56)
NO. OF DAYS OPERATED AT HOME STATION	300	365(47)	4500	5475 (47)
NO. OF HOURS OPERATED AT HOME STATION	2880	8760(47)	43200	131400 (47)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	6000	153300(47)	90000	2299500 (47)
NO. OF TIMES DEPLOYED	4	5(56)	60	75 (56)
NO. OF DAYS DEPLOYED	68	90(56)	1020	1350 (56)
NO. OF MILES DEPLOYED OVER PAVED ROADS	400	2000(56)	6000	30000 (56)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	60	100(56)	900	1500 (56)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	5(56)	0	75 (56)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1632	2160(56)	24480	32400 (56)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1400	8820(56)	21000	132300 (56)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
TEXAS	SPRING/SUMMER		
SOUTH CAROLINA	SUMMER		
NEW YORK	WINTER		
NEW ENGLAND	SUMMER		
EUROPE	ALL		
FLORIDA	SUMMER/FALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		
DENMARK	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT X

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 8 UPPER 10 (56) MAXIMUM 10 UPPER 10 (56)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSA-35/TSQ-92

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	1.5	-	22.5	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.5	-	37.5	-
NO. OF TIMES SETUP ON JACKS	2.5	-	37.5	-
NO. OF DAYS OPERATED AT HOME STATION	120	-	1800	-
NO. OF HOURS OPERATED AT HOME STATION	720	-	10800	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1800	-	27000	-
NO. OF TIMES DEPLOYED	1.5	-	22.5	-
NO. OF DAYS DEPLOYED	26.25	-	393.75	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	1950	-	29250	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	150	-	2250	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	630	-	9450	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	393.75	-	5906.25	-

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
OREGON	SUMMER		
WASHINGTON	WINTER/SUMMER		
PANAMA	WINTER		
SOUTH IDAHO	SUMMER		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER ____X____

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF:(MEDIAN)

NOMINAL 4 UPPER - MAXIMUM 6 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSA-34/TSQ-92

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.3	-	5.0	-
NO. OF TIMES SETUP AT HOME STATION	1.5	-	22.5	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.5	-	37.5	-
NO. OF TIMES SETUP ON JACKS	2.5	-	37.5	-
NO. OF DAYS OPERATED AT HOME STATION	120	-	1800	-
NO. OF HOURS OPERATED AT HOME STATION	720	-	10800	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1800	-	27000	-
NO. OF TIMES DEPLOYED	1.5	-	22.5	-
NO. OF DAYS DEPLOYED	26.25	-	393.75	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	1950	-	29250	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	150	-	2250	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	2.5	-	37.5	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	630	-	9450	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	787.5	-	11812.5	-

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
OREGON	SUMMER		
WASHINGTON	WINTER/SUMMER		
PANAMA	WINTER		
SOUTH IDAHO	SUMMER		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 4 UPPER 4 (75) MAXIMUM 6 UPPER 6 (75)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE OA-8448/TSQ-92

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.3	-	5.0	-
NO. OF TIMES SETUP AT HOME STATION	1.5	-	22.5	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.5	-	37.5	-
NO. OF TIMES SETUP ON JACKS	2.5	-	37.5	-
NO. OF DAYS OPERATED AT HOME STATION	120	-	1800	-
NO. OF HOURS OPERATED AT HOME STATION	720	-	10800	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1800	-	27000	-
NO. OF TIMES DEPLOYED	1.5	-	22.5	-
NO. OF DAYS DEPLOYED	26.25	-	393.75	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	1950	-	29250	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	150	-	2250	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	630	-	9450	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	393.75	-	5906.25	-

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
OREGON	SUMMER		
WASHINGTON	WINTER/SUMMER		
PANAMA	WINTER		
SOUTH IDAHO	SUMMER		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 4 UPPER 4 (75) MAXIMUM 6 UPPER 6 (75)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSQ-93

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	.1	.1(16)	1.5	1.6(16)
NO. OF TIMES SETUP AT HOME STATION	3.5	12 (16)	52.5	180 (16)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	4 (16)	0	60 (16)
NO. OF TIMES SETUP ON JACKS	2.5	4 (16)	37.5	60 (16)
NO. OF DAYS OPERATED AT HOME STATION	194	200 (16)	2910	3000 (16)
NO. OF HOURS OPERATED AT HOME STATION	1600	3104 (16)	24000	46560 (16)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	6000	55872 (16)	90000	838080 (16)
NO. OF TIMES DEPLOYED	4.5	6 (16)	67.5	90 (16)
NO. OF DAYS DEPLOYED	49.5	90 (16)	742.5	1350 (16)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1212	2400 (16)	18180	36000 (16)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	54	180(16)	810	2700 (16)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1188	2160(16)	17820	32400 (16)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1800	5184(16)	27000	77760 (16)

**ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
ALASKA	SUMMER/WINTER		
NEW YORK	SUMMER/WINTER		
SOUTH CAROLINA	SUMMER/WINTER		
NORTH CAROLINA	SPRING		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING

CABLE X — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 3 (16) — MAXIMUM 4 UPPER 4 (16)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE OA-845/TSQ

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.3	-	4.5	-
NO. OF TIMES SETUP AT HOME STATION	15	-	225	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	3	-	45	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	130	-	1950	-
NO. OF HOURS OPERATED AT HOME STATION	780	-	11700	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1950	-	29250	-
NO. OF TIMES DEPLOYED	3	-	45	-
NO. OF DAYS DEPLOYED	36	-	540	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	2100	-	31500	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	104	-	1530	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	864	-	12960	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	540	-	8100	-

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
FLORIDA	FALL		
NORTH CAROLINA	SPRING		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER ____

TIEDOWN METHOD(S):

CHAIN X — WEB SLING ____

CABLE ____ — BOLTED ____

LOAD/UNLOAD METHOD(S):

CRANE ____ — FORKLIFT ____

407L ____ — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER - — MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA ____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD ____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE OA-8452/TSQ

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.3	-	5.0	-
NO. OF TIMES SETUP AT HOME STATION	15	-	225	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	3	-	45	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	130	-	1950	-
NO. OF HOURS OPERATED AT HOME STATION	780	-	11700	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1300	-	19500	-
NO. OF TIMES DEPLOYED	3	-	45	-
NO. OF DAYS DEPLOYED	36	-	540	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	2100	-	31500	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	102	-	1530	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	864	-	12960	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	360	-	5400	-

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
FLORIDA	FALL		
NORTH CAROLINA	SPRING		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER _____

TIEDOWN METHOD(S):

CHAIN X — WEB SLING _____

CABLE _____ — BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ — FORKLIFT _____

407L _____ — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER - — MAXIMUM 2 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/GSQ-120

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	2	3(56)	30	45 (56)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0.5	2(56)	7.5	30 (56)
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	330	365(47)	4950	5475 (47)
NO. OF HOURS OPERATED AT HOME STATION	2970	5110(47)	44550	76650 (47)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1320	5110(47)	19800	76650 (47)
NO. OF TIMES DEPLOYED	1.8	3(63)	27	45 (63)
NO. OF DAYS DEPLOYED	39	70(63)	585	1050 (63)
NO. OF MILES DEPLOYED OVER PAVED ROADS	400	600(63)	6000	9000 (63)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	12	40(63)	180	600 (63)
NO. OF TIMES HELILIFTED	0	0.14(63)	0	2.1(63)
NO. OF TIMES DEPLOYED BY AIR	0	.2(56)	0	3 (56)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	936	1680(63)	14040	25200 (63)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	280	882(56)	4200	13230 (56)

*ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
GEORGIA	SUMMER		
TEXAS	SPRING/SUMMER		
SOUTH CAROLINA	SUMMER		
NEW YORK	WINTER		
NEW ENGLAND	SUMMER		
EUROPE	ALL		
FLORIDA	SUMMER/FALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2 (56) — MAXIMUM 1 UPPER 2 (56)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TSW-7

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0.1	.14(56)	1.5	2.1 (56)
NO. OF TIMES SETUP AT HOME STATION	3	10(37)	45	150 (37)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	3(56)	30	45 (56)
NO. OF TIMES SETUP ON JACKS	3	4(56)	45	60 (56)
NO. OF DAYS OPERATED AT HOME STATION	60	195(56)	900	2925 (56)
NO. OF HOURS OPERATED AT HOME STATION	360	1560(56)	5400	23400 (56)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	3000	5362(56)	45000	80438 (56)
NO. OF TIMES DEPLOYED	3	6(56)	45	90 (56)
NO. OF DAYS DEPLOYED	90	360(56)	1350	5400 (56)
NO. OF MILES DEPLOYED OVER PAVED ROADS	320	3000(56)	4800	45000 (56)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	6	324(56)	90	4860 (56)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	1	1(37)	15	15 (37)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	2160	8640(56)	32400	129600 (56)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	4500	8640(56)	67500	129600 (56)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
PHILIPPINES	ALL		
JAPAN	ALL		
OKINAWA	ALL		
THAILAND	ALL		
VIETNAM	ALL		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
EUROPE (ENTRAL)	ALL		
CALIFORNIA	ALL		
WORLDWIDE	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN — WEB SLING X

CABLE — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2 (94) — MAXIMUM 2 UPPER 2 (94)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TTC

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE				
	ANNUAL		15 YR LIFE		
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT	
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.8	0	12	(95)
NO. OF TIMES SETUP AT HOME STATION	4	15(99)	60	900	(99)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.8	10(97)	42	150	(97)
NO. OF TIMES SETUP ON JACKS	1	10(97)	15	150	(97)
NO. OF DAYS OPERATED AT HOME STATION	170	365(99)	2550	5475	(99)
NO. OF HOURS OPERATED AT HOME STATION	1360	8760(99)	20400	131400	(99)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	3825	17520(99)	57375	262800	(99)
NO. OF TIMES DEPLOYED	4	5(99)	60	75	(99)
NO. OF DAYS DEPLOYED	68	150(99)	1020	2250	(99)
NO. OF MILES DEPLOYED OVER PAVED ROADS	800	12800(99)	12000	192000	(99)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	30	122(99)	450	1830	(99)
NO. OF TIMES HELILIFTED	0	3(99)	0	45	(99)
NO. OF TIMES DEPLOYED BY AIR	0.1	5(76)	1.5	75	(76)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0	
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-	
NO. OF HOURS OPERATED ON DEPLOYMENT **	1632	3600(99)	24480	54000	(99)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1258	4500(99)	18870	67500	(99)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CONUS	ALL		
PANAMA	SUMMER		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
EUROPE	ALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		
DENMARK	ALL		
WORLDWIDE	ALL		
KOREA	FALL/WINTER		
ALASKA	WINTER		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

X CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 4 (99) — MAXIMUM 2 UPPER 4 (99)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA X — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/MTC-2

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	3	-	45	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	1	-	15	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	60	-	900	-
NO. OF HOURS OPERATED AT HOME STATION	360	-	5400	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1800	-	27000	-
NO. OF TIMES DEPLOYED	2.5	-	37.5	-
NO. OF DAYS DEPLOYED	37.5	-	562.5	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	3500	-	52500	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	75	-	1125	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	900	-	13500	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1125	-	16875	-

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
TEXAS	SUMMER		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER ____

TIEDOWN METHOD(S):

CHAIN ____ — WEB SLING ____

CABLE X — BOLTED ____

LOAD/UNLOAD METHOD(S):

CRANE ____ — FORKLIFT X

407L ____ — WRECKER ____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 0 UPPER - — MAXIMUM 0 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA ____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE ____

LOAD/UNLOAD ____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TTC-7

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	6.5	-	97.5	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0.8	-	12	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	18	-	270	-
NO. OF HOURS OPERATED AT HOME STATION	132	-	1980	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	300	-	4500	-
NO. OF TIMES DEPLOYED	2.8	-	42	-
NO. OF DAYS DEPLOYED	36.4	-	546	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	2402.5	-	36037.5	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	16.5	-	247.5	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	373.6	-	13104	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	695.6	-	10434	-

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CONUS	ALL		
OVERSEAS	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER

TIEDOWN METHOD(S):

CHAIN X — WEB SLING

CABLE X — BOLTED

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT

407L — WRECKER

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 0.5 UPPER 1 (75) — MAXIMUM 0.5 UPPER 1 (75)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TTC-22

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	.1(37)	0	1.5 (37)
NO. OF TIMES SETUP AT HOME STATION	4	5 (37)	60	75 (37)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	5 (37)	30	75 (37)
NO. OF TIMES SETUP ON JACKS	0	0	0	0
NO. OF DAYS OPERATED AT HOME STATION	32	200 (37)	480	3000 (37)
NO. OF HOURS OPERATED AT HOME STATION	256	1699 (37)	3840	24000 (37)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	800	4000 (37)	12000	60000 (37)
NO. OF TIMES DEPLOYED	4	5 (37)	60	75 (37)
NO. OF DAYS DEPLOYED	72	112.5(37)	1080	1688 (37)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1120	3150 (37)	16800	47250 (37)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	16	243 (37)	240	3645 (37)
NO. OF TIMES HELILIFTED	0	3 (37)	0	45 (37)
NO. OF TIMES DEPLOYED BY AIR	0	1.5(37)	0	22.5 (37)
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1728	2700 (37)	25920	40500 (37)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1200	2812 (37)	18000	42188 (37)

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
FLORIDA	FALL		
NORTH CAROLINA	SPRING		
ILLINOIS	SUMMER/SPRING		
KOREA	FALL/WINTER		
WASHINGTON	SUMMER/WINTER		
NEW MEXICO	WINTER		
ALASKA	WINTER		
IDAHO	SUMMER		
CALIFORNIA	ALL		
WORLDWIDE	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN — WEB SLING X

CABLE — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE — FORKLIFT X

407L — WRECKER

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 1 (97) — MAXIMUM 2 UPPER 2 (97)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TTC-28

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	3*	-
NO. OF TIMES SETUP AT HOME STATION	15	-	225	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	-	60	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	170	-	2550	-
NO. OF HOURS OPERATED AT HOME STATION	1360	-	20400	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	5100	-	76500	-
NO. OF TIMES DEPLOYED	4	-	60	-
NO. OF DAYS DEPLOYED	68	-	1020	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	12800	-	192000	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	160	-	2400	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1632	-	24480	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	2040	-	30600	-

* ASSUMES 5 YEAR CYCLE

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 (94) MAXIMUM 2 UPPER 2 (94)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TTC-30

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	[illegible] (70)	0	12 (70)
NO. OF TIMES SETUP AT HOME STATION	1.5	5 (80)	22.5	75 (80)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.5	10 (76)	37.5	150 (76)
NO. OF TIMES SETUP ON JACKS	3	10 (80)	45	150 (80)
NO. OF DAYS OPERATED AT HOME STATION	290	365 (76)	4350	5475 (76)
NO. OF HOURS OPERATED AT HOME STATION	2295	8760 (76)	34425	131400 (76)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	4525	17500 (76)	67875	262800 (76)
NO. OF TIMES DEPLOYED	1.5	5 (80)	22.5	75 (80)
NO. OF DAYS DEPLOYED	33.8	150 (80)	507	2250 (80)
NO. OF MILES DEPLOYED OVER PAVED ROADS	540	1000 (80)	8100	15000 (80)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	60	150 (80)	900	2250 (80)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	811	3600 (80)	12168	54000 (80)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1329	4500 (76)	19935	67500 (76)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
TEXAS	SPRING/SUMMER	DENMARK	ALL
SOUTH CAROLINA	SUMMER	WORLD WIDE	ALL
NEW YORK	WINTER		
NEW ENGLAND	SUMMER		
OREGON	SUMMER		
WASHINGTON	WINTER/SUMMER		
PANAMA	WINTER		
SOUTH IDAHO	SUMMER		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
EUROPE (CENTRAL)	ALL		
EUROPE	ALL		
FLORIDA	ALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING X

CABLE _____ BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT X

407L _____ WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2 (91) MAXIMUM 2 UPPER 2 (91)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TYC

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.2(98)	0	3 (98)
NO. OF TIMES SETUP AT HOME STATION	7.5	13.5(98)	112	202 (98)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.2	5 (98)	33	75 (98)
NO. OF TIMES SETUP ON JACKS	0	6 (98)	0	90 (98)
NO. OF DAYS OPERATED AT HOME STATION	210	363 (98)	3150	5445 (98)
NO. OF HOURS OPERATED AT HOME STATION	1100	6000 (98)	16500	90000 (98)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	6000	9720 (97)	90000	145800 (97)
NO. OF TIMES DEPLOYED	3	5 (98)	45	75 (98)
NO. OF DAYS DEPLOYED	68	120 (98)	1020	1800 (98)
NO. OF MILES DEPLOYED OVER PAVED ROADS	1200	2100 (98)	18000	31500 (98)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	16.2	35 (98)	243	5.25(98)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	1 (87)	0	15 (87)
NO. OF TIMES DEPLOYED BY TRAIN	0	0.3(97)	0	4.5 (97)
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1632	2880 (98)	24480	43200 (98)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1185	4536 (98)	17775	68040 (98)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		
CONUS	ALL		
PHILIPPINES	ALL		
JAPAN	ALL		
THAILAND	ALL		
VIETNAM	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN — WEB SLING

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L — WRECKER

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 3 (97) — MAXIMUM 2 UPPER 3 (97)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA X — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TYC-8

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0.2	0	3 (94)
NO. OF TIMES SETUP AT HOME STATION	11.8	13.5(94)	177	202 (94)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.5	4.5(94)	37.5	68 (94)
NO. OF TIMES SETUP ON JACKS	0	6 (94)	0	6 (94)
NO. OF DAYS OPERATED AT HOME STATION	221	363 (94)	3315	5445 (94)
NO. OF HOURS OPERATED AT HOME STATION	1605	2210 (94)	24075	33150 (94)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	6630	9720 (94)	99450	145800 (94)
NO. OF TIMES DEPLOYED	3.5	4 (94)	52.5	60 (94)
NO. OF DAYS DEPLOYED	105	120 (94)	1575	1800 (94)
NO. OF MILES DEPLOYED OVER PAVED ROADS	4120	4200 (94)	61800	63000 (94)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	70	70 (94)	1050	1050 (94)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0.2	0.3(92)	3	4.5 (92)
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	2520	2880 (94)	37800	43200 (94)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	3150	4536 (94)	47250	68040 (94)

** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
PHILIPPINES	ALL		
JAPAN	ALL		
OKINAWA	ALL		
THAILAND	ALL		
VIETNAM	ALL		
TEXAS	SUMMER		
CONUS	ALL		
OVERSEAS	ALL		
FLORIDA	FALL		
NORTH CAROLINA	SPRING		
ILLINOIS	SUMMER/SPRING		
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK X MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X FORKLIFT X

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 (90) MAXIMUM 2 UPPER 2 (90)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE X

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE AN/TYC-10

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	JPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	2.5	5 (26)	37.5	75 (26)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	0	5 (26)	0	75 (26)
NO. OF TIMES SETUP ON JACKS	2.5	5 (26)	37.5	75 (26)
NO. OF DAYS OPERATED AT HOME STATION	155	300 (26)	2325	4500 (26)
NO. OF HOURS OPERATED AT HOME STATION	795	6000 (26)	11925	90000 (26)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	3900	4000 (16)	58500	60000 (16)
NO. OF TIMES DEPLOYED	0.5	5 (26)	7.5	75 (26)
NO. OF DAYS DEPLOYED	46	90 (16)	690	1350 (16)
NO. OF MILES DEPLOYED OVER PAVED ROADS	100	1000 (16)	1500	15000 (16)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	20	20 (16)	300	300 (16)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	0	0	0	0
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1104	2160 (16)	16560	32400 (16)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	920	1170 (16)	13800	17550 (16)

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
KOREA	ALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		
FLORIDA	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE _____ BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 2 (88) MAXIMUM 1 UPPER 2 (88)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE MAINTENANCE & SUPPORT SHELTERS

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	3	6	45	90
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.5	6	37.5	90
NO. OF TIMES SETUP ON JACKS	0	7	0	105
NO. OF DAYS OPERATED AT HOME STATION	200	365	3000	5475
NO. OF HOURS OPERATED AT HOME STATION	1260	8760	18900	131400
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	4200	31200	63000	468000
NO. OF TIMES DEPLOYED	3	7	15	105
NO. OF DAYS DEPLOYED	30	122	450	1830
NO. OF MILES DEPLOYED OVER PAVED ROADS	480	4900	7200	73500
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	42	280	630	4200
NO. OF TIMES HELILIFTED	0	1	0	15
NO. OF TIMES DEPLOYED BY AIR	0	1	0	15
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	720	2928	10800	43920
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	985	9432	14775	141480

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
CONUS	ALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		
PACAF	ALL		
KOREA	ALL		
ALASKA	WINTER/SUMMER		
DESERT	SUMMER		
PANAMA	WINTER		
EUROPE	ALL		
ITALY	ALL		
DENMARK	ALL		
EGYPT	FALL		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		

MOBILIZING METHOD(S):

TRUCK X _____ MOBILIZER X _____

TIEDOWN METHOD(S):

CHAIN X _____ WEB SLING X _____

CABLE X _____ BOLTED X _____

LOAD/UNLOAD METHOD(S):

CRANE X _____ FORKLIFT X _____

407L X _____ WRECKER X _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 3 _____ MAXIMUM 2 UPPER 4 _____

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA X _____ INSPECTION/MAINTENANCE X _____

CAMOUFLAGE X _____ ERECTION/STRIKE X _____

LOAD/UNLOAD X _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE S-138-TR

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	3	-	45	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	-	60	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	260	-	3900	-
NO. OF HOURS OPERATED AT HOME STATION	6240	-	93600	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	7800	-	117000	-
NO. OF TIMES DEPLOYED	3	-	45	-
NO. OF DAYS DEPLOYED	49.5	-	742.5	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	1212	-	18180	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	54	-	810	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1188	-	17820	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1485	-	22275	-

* ASSUMES 5 YEAR CYCLE

**ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
ALASKA	SUMMER/WINTER		
NEW YORK	SUMMER/WINTER		
SOUTH CAROLINA	SUMMER/WINTER		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER _____

TIEDOWN METHOD(S):

CHAIN X — WEB SLING _____

CABLE X — BOLTED _____

LOAD/UNLOAD METHOD(S):

CRANE _____ — FORKLIFT _____

407L _____ — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER - — MAXIMUM 1 UPPER -

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE _____

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE S-141

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	-	0	3*
NO. OF TIMES SETUP AT HOME STATION	3	-	45	-
NO. OF TIMES SETUP ON UNEVEN TERRAIN	4	-	60	-
NO. OF TIMES SETUP ON JACKS	0	-	0	-
NO. OF DAYS OPERATED AT HOME STATION	260	-	3900	-
NO. OF HOURS OPERATED AT HOME STATION	6240	-	93600	-
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	5200	-	78000	-
NO. OF TIMES DEPLOYED	3	-	45	-
NO. OF DAYS DEPLOYED	49.5	-	742.5	-
NO. OF MILES DEPLOYED OVER PAVED ROADS	1212	-	18180	-
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	54	-	810	-
NO. OF TIMES HELILIFTED	0	-	0	-
NO. OF TIMES DEPLOYED BY AIR	0	-	0	-
NO. OF TIMES DEPLOYED BY TRAIN	0	-	0	-
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	1188	-	17820	-
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	990	-	14850	-

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
ALASKA	SUMMER/WINTER		
NEW YORK	SUMMER/WINTER		
SOUTH CAROLINA	SUMMER/WINTER		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER ____

TIEDOWN METHOD(S):

CHAIN X — WEB SLING ____

CABLE X — BOLTED ____

LOAD/UNLOAD METHOD(S):

CRANE ____ — FORKLIFT ____

407L ____ — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 1 (75) — MAXIMUM 1 UPPER 1 (75)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA ____ — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE ____

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE S-280

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	4	6	60	90
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2.2	6	33	90
NO. OF TIMES SETUP ON JACKS	0	3	0	45
NO. OF DAYS OPERATED AT HOME STATION	156	365	2340	5475
NO. OF HOURS OPERATED AT HOME STATION	1560	8760	23400	131400
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	3650	31200	54750	468000
NO. OF TIMES DEPLOYED	4	8	60	120
NO. OF DAYS DEPLOYED	26.2	240	393	3600
NO. OF MILES DEPLOYED OVER PAVED ROADS	486	32000	7290	480000
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	56	1000	840	15000
NO. OF TIMES HELILIFTED	0	1	0	15
NO. OF TIMES DEPLOYED BY AIR	0	1	0	15
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	628.8	5760	9432	86400
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	1350	12000	20250	180000

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
NORTHERN GERMANY	ALL		
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		
PACAF	ALL		
DENMARK	ALL		
CONUS	ALL		
KOREA	ALL		
ALASKA	WINTER		
DESERT	SUMMER		
PANAMA	WINTER		
EUROPE	ALL		
ITALY	ALL		
GERMANY	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE X — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 2 UPPER 2 — MAXIMUM 2 UPPER 2

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE

LOAD/UNLOAD X

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE S-517

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	2	5 (84)	30	105 (84)
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	4 (84)	30	60 (84)
NO. OF TIMES SETUP ON JACKS	2.5	4 (84)	37.5	60 (84)
NO. OF DAYS OPERATED AT HOME STATION	60	200 (84)	900	3000 (84)
NO. OF HOURS OPERATED AT HOME STATION	480	1200 (84)	6300	18000 (84)
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	1200	2160 (76)	18000	32400 (76)
NO. OF TIMES DEPLOYED	2.5	6 (84)	37.5	90 (84)
NO. OF DAYS DEPLOYED	90	102 (76)	1350	1530 (76)
NO. OF MILES DEPLOYED OVER PAVED ROADS	808	4536 (76)	12120	68040 (76)
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	30	96 (76)	450	1440 (76)
NO. OF TIMES HELILIFTED	0	0	0	0
NO. OF TIMES DEPLOYED BY AIR	1.5	-	22.5	-
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	2160	2448 (76)	32400	36720 (76)
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	2160	4080 (76)	32400	61200 (76)

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
EGYPT	FALL		
KOREA	WINTER		
NORTH CAROLINA	FALL		
MISSISSIPPI	FALL/SUMMER		
SOUTH CAROLINA	SUMMER		
FLORIDA	SUMMER		
EUROPE (POSSIBLE)	SUMMER		
FT. DRUM	WINTER		
NORWAY	ALL		
MIDDLE EAST	ALL		
NORTH AFRICA	ALL		
EUROPE (CENTRAL)	ALL		
WORLDWIDE	ALL		
SAUDI ARABIA	ALL		

MOBILIZING METHOD(S):

TRUCK _____ MOBILIZER X

TIEDOWN METHOD(S):

CHAIN _____ WEB SLING _____

CABLE X BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE _____ FORKLIFT _____

407L _____ WRECKER _____

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 3.5 UPPER 4 (93) MAXIMUM 4 UPPER 4 (93)

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA _____ INSPECTION/MAINTENANCE X

CAMOUFLAGE X ERECTION/STRIKE _____

LOAD/UNLOAD _____

OPERATIONAL MODE SUMMARY

EQUIPMENT TYPE S-530

TACTICAL/LOGISTIC EVENTS	MEDIAN FREQUENCY OF OCCURRENCE			
	ANNUAL		15 YR LIFE	
	POINT ESTIMATE	UPPER LIMIT	POINT ESTIMATE	UPPER LIMIT
NO. OF TIMES SENT TO DEPOT FOR REPAIRS	0	0	0	3*
NO. OF TIMES SETUP AT HOME STATION	2	12	30	180
NO. OF TIMES SETUP ON UNEVEN TERRAIN	2	10	30	150
NO. OF TIMES SETUP ON JACKS	2	7	30	105
NO. OF DAYS OPERATED AT HOME STATION	1	1 (90)	15	15 (90)
NO. OF HOURS OPERATED AT HOME STATION	2210	8760	33150	131400
NO. OF TIMES DOOR OPENED/ CLOSED AT HOME STATION	6000	12480	90000	187200
NO. OF TIMES DEPLOYED	2.5	7	37.5	105
NO. OF DAYS DEPLOYED	31.8	122.5	477	1837.5
NO. OF MILES DEPLOYED OVER PAVED ROADS	472	4900	7080	73500
NO. OF MILES DEPLOYED OVER UNPAVED ROADS	36	360	540	5400
NO. OF TIMES HELILIFTED	0	1	0	15
NO. OF TIMES DEPLOYED BY AIR	0	1	0	15
NO. OF TIMES DEPLOYED BY TRAIN	0	0	0	0
NO. OF TIMES DEPLOYED BY SHIP	-	-	-	-
NO. OF HOURS OPERATED ON DEPLOYMENT **	763.2	2940	11448	44100
NO. OF TIMES DOOR OPENED/ CLOSED ON DEPLOYMENT	500	2700	7500	40500

* ASSUMES 5 YEAR CYCLE
** ASSUMES 24 HOUR/DAY OPERATION

OPERATIONAL MODE SUMMARY

WHERE DEPLOYED	SEASON OF THE YEAR	WHERE DEPLOYED	SEASON OF THE YEAR
NORTHERN GERMANY	ALL		
GERMANY	ALL		
SAUDI ARABIA	ALL		
WORLDWIDE	ALL		
PACAF	ALL		
CONUS	ALL		
KOREA	ALL		
ALASKA	WINTER/SUMMER		
DESERT	SUMMER		
PANAMA	WINTER		
EUROPE	ALL		

MOBILIZING METHOD(S):

TRUCK X — MOBILIZER X

TIEDOWN METHOD(S):

CHAIN X — WEB SLING X

CABLE — BOLTED X

LOAD/UNLOAD METHOD(S):

CRANE X — FORKLIFT X

407L X — WRECKER X

NO. OF PERSONNEL ON ROOF: (MEDIAN)

NOMINAL 1 UPPER 3 — MAXIMUM 1.5 UPPER 3

REASON(S) FOR PERSONNEL ON ROOF:

ANTENNA — INSPECTION/MAINTENANCE X

CAMOUFLAGE X — ERECTION/STRIKE X

LOAD/UNLOAD X

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